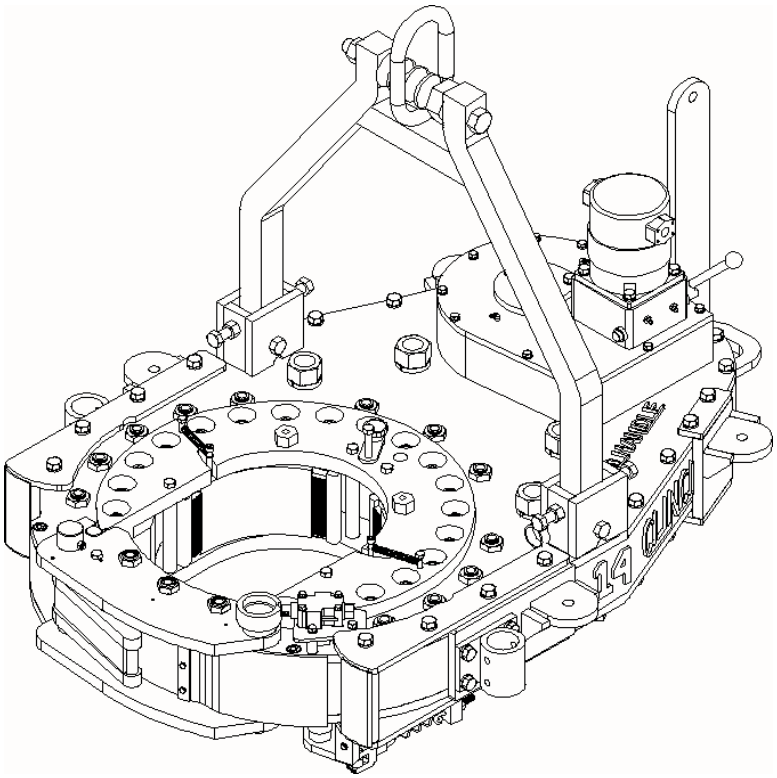
SUPERIOR
Manufacturing & Hydraulics

TECHNICAL MANUAL

14" CLINCHER® TONG



covers

TONG MODEL

CLE14000-05

4225 Highway 90, East
Broussard, Louisiana 70518
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www.superior-manf.com

Published 07/2003

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The products described in this manual are covered by U.S. and foreign Patents and/or pending Patent Applications.

This manual is not a controlled document and is subject to revision without notice. To receive updates and insure you have access to the latest information concerning the 14" **CLINCHER®** Tong, we request you complete this form and return the lower half to SUPERIOR Manufacturing and Hydraulics by mail or facsimile. Access to our manuals can also be acquired through our web site www.superior-manf.com. Select the tab '**CLINCHER®** Products', select the equipment from the list to get Specs page, select the tab 'Download Manual'.

Name: _____
Company: _____
Address: _____
Address: _____
City: _____ **State:** _____
Postal Code: _____ **Country:** _____
Telephone: _____ **Fax:** _____

Tong Model No.: _____ **Serial No.:** _____
Backup Model No.: _____ **Serial No.:** _____
Assembly Date: _____

- – -

14" CLINCHER® Tong Technical Manual Registration Form

Name: _____
Company: _____
Address: _____
Address: _____
City: _____ **State:** _____
Postal Code: _____ **Country:** _____
Telephone: _____ **Fax:** _____

Tong Model No.: _____ **Serial No.:** _____
Backup Model No.: _____ **Serial No.:** _____
Assembly Date: _____

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14" CLINCHER® TONG

REVISION TABLE

Section	*Page*	*Date*	*Description*
Cover Title Pg. 3	Cover Title Pg. 5	02/06	Removed ISO emblems.
Copyright	Copyright	02/06	Added **CHROMEMASTER™**, **HYTOPS™**, Drillmaster, **GRIT FACE™** & Low Friction.
3	0 3-4	02/06	Added Dovetail Strip Die information. Revised chart CJDT14H Jaw Ranges. Added chart for Splined Jaws.
7	1	02/06	Revised Spare Parts List.
9	2 3, 5, 9-11, 13, 16, 26-30	02/06	Added 14" Splined Jaw Assembly. Revised illustrations Assembly, Gear Train, Pinion Gear Assy, Secondary Gear Assy, Encoder Assy, Shift Gear Assy, Top Cage Plate Assy., Cage Plate Spacer, Valve Bank, LF Tong Jaw Assy. CJ-LF-14A, -14B & -14C, DT Jaw Assy's CJDT14H 5"-12 3/4", DT Jaw Assy's CJDT14H 13 3/8"-14 3/8".
14	9-12	02/06	Added Denison Dump Valve Illustration after tech. data on P/N 2070. Added Assy. of Dump Valve Electrical Connector.

14" CLINCHER® Tong

HAZARD WARNING

Nomenclature used in this manual:

WARNING	concerns an operating procedure or practice that, if not strictly observed, can result in injury to personnel or loss of life.
Caution	concerns an operating procedure or practice that, if not strictly observed, can result in damage to or destruction of equipment.
Note	concerns an operating procedure or practice that needs highlighting.

CLINCHER® Tongs are manufactured to provide a means of making up or breaking out high torque tubular connections. They utilize high pressure hydraulic fluid power which can cause the tong to move suddenly and with great force if the tong is not properly rigged up and operated. **CLINCHER®** Tongs contain rotating and reciprocating parts which can severely or fatally injure personnel who are operating, repairing, or near this equipment during its operation. **WARNING: Tongs are not to be operated by untrained personnel or personnel with diminished physical or mental capacity. No work of any type, including changing of dies, is to be carried out while the tong is connected to any hydraulic power unit.**

CLINCHER® Tongs are heavy tools. They should be suspended from a secure, high strength 7/8" IWRC minimum diameter wire cable with a 31 ton minimum breaking strength. The wire cable should be hung as close to the center of the wellbore as possible, without interfering with drilling equipment operation, to allow the tong to be readily swung into the working position. Vertical position control should be achieved by means of a **CLINCHER®** hydraulically operated lift cylinder/spring hanger. **WARNING: Users must insure the entire suspension system including cables, rig mounting points, lift cylinders, tong lifting brackets/bridles, winches, pulleys, counter weights, etc., are capable of handling the static weight of the tong plus any loads which could be transferred to it during the makeup or breakout process PLUS any shock loads which may be seen during operation. This system must readily allow downward movement equal to a minimum of the thread makeup distance to avoid overloading the suspension system and/or damage to equipment.**

A 1 1/4" IWRC minimum diameter wire cable with a 79.9 ton minimum or better breaking strength, should be attached at a 90 degree angle to the tong and at the same level to insure proper readout of torque indicator. A SNUBBING LINE should always be attached even when an integral backup is in use to provide additional safety in the event of a backup slippage. **WARNING: Users must provide a means of safely controlling the tong movements in all directions when it is in use. Failure to account for the its size, weight, movement and the amount of torque developed could result in personnel injury or death.**

14" CLINCHER® Tong

HAZARD WARNING

CLINCHER® Tongs utilize high pressure hydraulic fluids. Portions of the tong, control valves, hydraulic lines and cylinders may contain high pressure fluid even when the power unit is de-energized and the fluid supply hoses are disconnected. During normal operation the temperature of the hydraulic fluids as well as hoses, piping, valves, etc., can rise to a level which can cause burns. **WARNING: Personal protective gear including safety glasses, face shields, protective gloves and protective clothing must be worn to guard against the hazards of high pressure fluids. Tight fitting clothing is required to prevent entanglement in rotating components. These tools should be serviced by thoroughly trained and qualified hydraulic technicians using procedures to safely insure hydraulic pressure is bled from these circuits.**

The **CLINCHER®** Tong is equipped with a door interlock system which prevents tong rotation whenever the door is open. This system is to be tested before each mobilization and at every shift change. Should this system be determined to be inoperative, the tong is to be removed from service and tagged as ***in-operative*** until repairs are made. **CAUTION:** Operating the tong with the door in the open position could result in severe damage to the equipment and will void all manufacturer warranties. **WARNING: Operating the tong with the door open by means of a defective or bypassed door interlock system exposes the operator and nearby personnel to potentially fatal hazards.**

No attempt should be made to operate the **CLINCHER®** Tong for any purpose other than which it is intended. This system is capable of generating very large clamping forces and torsional loads which, if improperly applied or controlled, could result in damage to the tubular, to the tong or could possibly result in injury or death of personnel. Do not attempt to operate the unit without correct dies and the proper size tubular being in the tong. See Section 3 for more information concerning the selection and use of dies. **CAUTION: Operating this equipment without the correct size, type and orientation of dies can result in damage to the equipment or tubulars being handled.**

HYDRAULIC PRODUCT SAFETY

WARNING: Valve lever (spool) may "stick" (not center) under certain conditions allowing the hydraulic equipment to continue to operate and could cause serious injury, death or equipment failure.

VALVE SAFETY: Read and follow instructions carefully. Failure to observe instructions and guidelines may cause serious injury, death or equipment failure. A sticking valve (spool bind) may be caused by one or more of the following factors:

DIRTY OIL: Oil must be filtered to a minimum of 25 microns. Filters should be changed regularly - spin-on types after 50 hours of initial use and then after every two hundred fifty hours of use. Use of a condition indicator is recommended. Consult your tractor or implement owner's manual for filtration and changing recommendations for internal systems.

OIL REQUIREMENTS: Premium quality anti-wear type oil with a viscosity between 100 and 200 SSU at operating temperatures. Certain synthetic oils may cause spool seals to swell and the valve to stick. If in doubt, call CROSS Engineering.

IMPROPER HOOK UP OR MOUNTING: Always use the proper size fittings. Hook up "in" & "out" as noted on the valve body. Do not overtorque pipe fittings. Mounting surfaces should be flat and care should be used when tightening mounting bolts. Over-tightened bolts can cause spool bind and casting breakage. When hooking a valve in series, always use a power beyond sleeve. Consult your tractor or implement manual to make sure you have the proper quick disconnect line connected to the inlet of the remote valve.

MISAPPLICATION: Always use the proper valve for the job. CONVERTA, CD, CS or CA valves should never be used for metered heavy load lifting - loaders or similar applications. Use an open center valve for open center applications and a closed center valve for closed applications. If in doubt, check with your tractor dealer. Contact CROSS if the valve allows the hydraulic equipment to creep excessively.

MAINTENANCE: Make sure all bolts are tightened and torqued to the recommended specification. Bent or broken parts should not be used. Replace immediately. Always use exact replacements. Always protect valve spool from paint overspray.

Faulty quick disconnects can cause high back pressures and sticking spools. Check quick disconnects periodically to make sure they are functioning properly. If valve spool does not center or appears to stick, do not use!

PUMPS & MOTORS SAFETY:

A relief or bypass in your hydraulic system is necessary to prevent pump from breakage due to overpressurization. Use correct fittings and proper oil as noted in the technical service manual packed with each unit. Change oil as recommended by your implement or tractor manufacturer.

CYLINDER SAFETY:

Check clevis clearances before, during and after extending the cylinder and before using the cylinder under pressure to avoid possible injury, or bent or broken rods caused by binding. Never operatea cylinder above recommended pressures. Never use a cylinder as a safety device when trans-porting equipment.

PINHOLE LEAKS:

If you observe a pinhole leak, discontinue use of the component. If oil has penetrated your skin or contacted your eye, seek medical attention immediately!

DESCRIPTION and APPLICATION

The **CLINCHER®** Tong system is an "open-throat" design which can handle tubulars as small as 4 1/2 inches to as large as 14 inches in diameter. This system features two (2) jaws in the Tong which encircle the pipe. Wrap Around jaws and dies, combined with our low friction jaw technology and constant radial load cam system provide exceptional gripping capabilities with reduced pipe deformation, stress, and marking. Using our non-marking aluminum die system or **GRIT FACE™** dies in the Tong will now allow stainless steel corrosion resistant alloys (CRA) to be run as quickly and easily as a traditional tong runs conventional steel tubulars.

Notable Features and Benefits

Low Friction Jaws	increases cam angle efficiency to allow use of aluminum dies
Splined Die System	aligns the die with the tubular and more evenly distributes radial load, essentially wrapping the die around the tube reduces pipe stress, deformation, and minimizes marking
Constant Cam Angle	insures an adequate radial load is available regardless of relative rotation to enhance performance on undersized pipe
Die Retention Method	provides an enhanced method of preventing equipment damage and die loss if the pipe is inadvertently moved while the tong is still gripping the pipe
Self Adjusting Brake	eliminates need to manually adjust brake bands to compensate for normal wear

In addition to these unique features listed above, the **CLINCHER®** Tong System is also equipped with numerous standard features including:

Door Interlock	prevents tong ring gear rotation whenever the tong door is open but allows control and operation of the lift cylinder at all times
Encoder Adapter	accepts customer's turns encoder to signal to a torque/turn computer
Pressure Control Valve	adjustable pressure control valves allow the customer to limit the amount of pressure applied and torque developed

The features described above are covered by US and foreign patents or pending US and foreign patents.

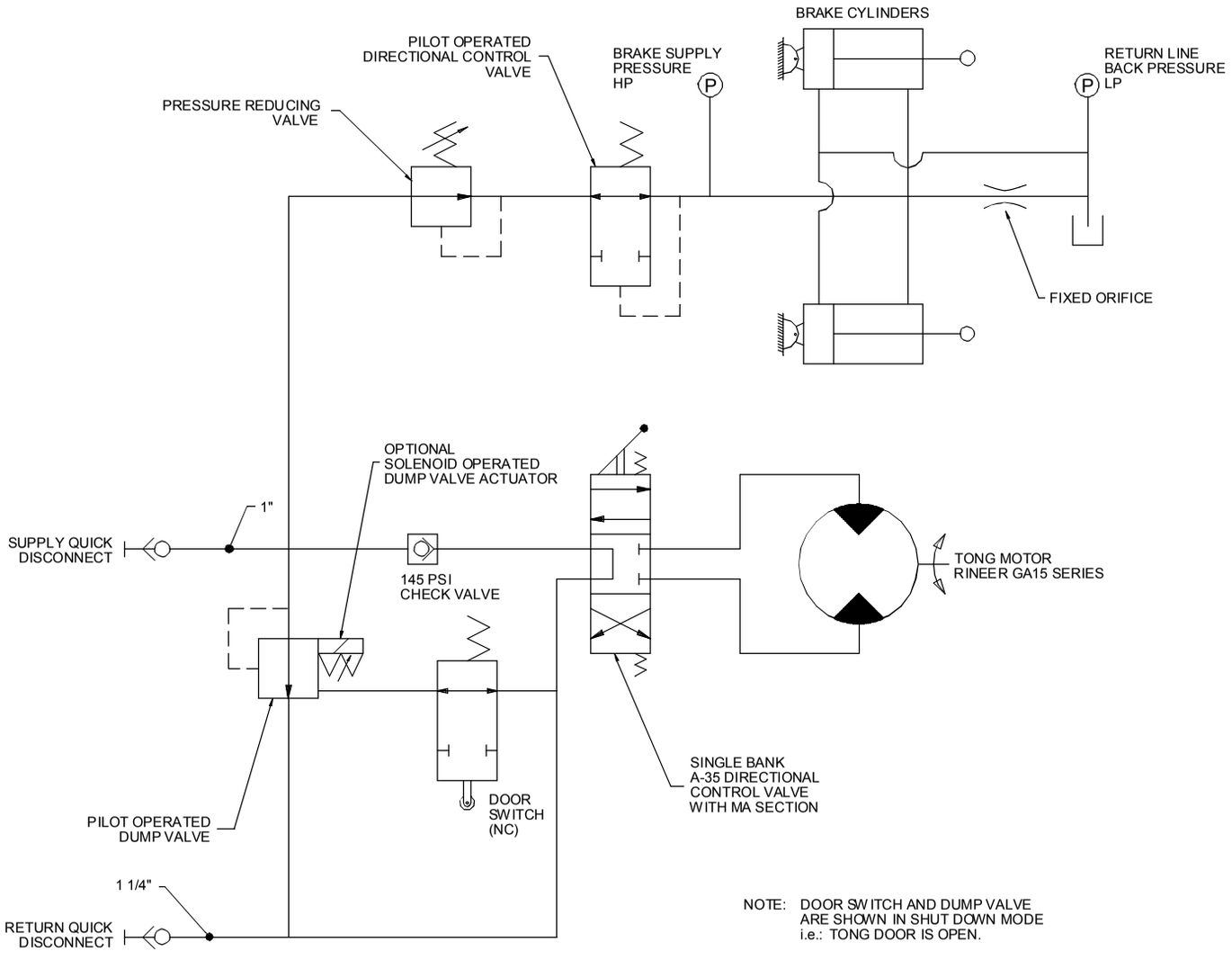
SPECIFICATIONS

Maximum Torque	50,000 ft.lbs. / 67,791 Nm
Maximum Operating Pressure	2,500 psi / 172 bar
RPM @ 60 GPM/227 LPM: Manual	
High	40
Low	6
Handle Length Tong	40.0" / 101.6 cm
Overall Length	62.0" / 157.5 cm
Overall Width including Name Plates	36.0" / 91.4 cm
Overall Width including Tong Legs	45.5" / 115.6 cm
Overall Height w/o Backup	28.0" / 71.1 cm
Weight/Tong	2,200 lbs. / 998 kg
Jaw Capacity	4 1/2" thru 14"

Operates using Dovetailed Strip Dies, Steel Tooth Wrap Around Dies, **GRIT FACE™** Wrap Around Dies, and Aluminum Wrap Around Dies.

Standard Equipment:
- Door Interlock
- Self Adjusting Brake
- Bail Assembly

Optional Equipment:
- Two Speed Hydraulic Motor
- Electronic Solenoid Dump Valve
- Shipping Stand, or Skid



NOTE: DOOR SWITCH AND DUMP VALVE ARE SHOWN IN SHUT DOWN MODE i.e.: TONG DOOR IS OPEN.

BASIC HYDRAULIC SCHEMATIC

CLE1075, CLE14000, & CLE2000 CASING TONGS

NOTE: NUMEROUS FITTINGS, HOSES, & NIPPLES ARE NOT ILLUSTRATED IN THIS SCHEMATIC

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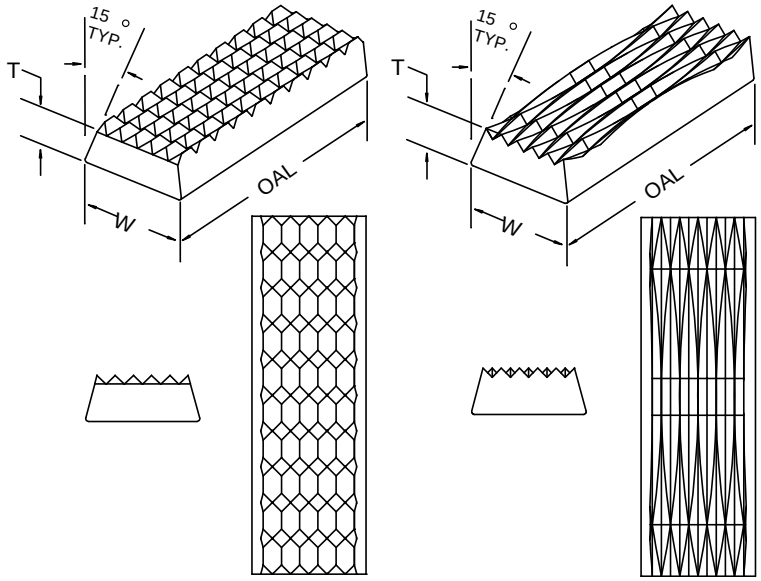
CLINCHER® DIES

Many **CLINCHER®** Tongs and Backups utilize jaws and/or adapters which accept Dovetail Inserts (AKA Pencil Dies or Strip Dies) to effectively grip tubulars. Jaw systems and jaw adapters are also available which accommodate Wrap-Around Fine Tooth Steel Dies, **GRIT FACE™** Dies and Aluminum Dies.

The appropriate jaws, die adapters and dies required for a specific tubular OD are also described in this section of the manual.



STRAIGHT TOOTH **DIAMOND TOOTH**

Note: Diamond Tooth Dies are used when a more aggressive bite is required.

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
5/16	5/8	3 1/2	*	*
5/16	5/8	3 7/8	DTI4052	*
5/16	5/8	4 1/2	DTI4002	*
3/8	5/8	3 1/2	DTI4030	*
3/8	5/8	3 7/8	DTI4051	*
3/8	5/8	4 1/2	DTI4001	*

Thickness	Width	OAL	P/N Straight Tooth	P/N Diamond Tooth
17/32	5/8	3 1/2	DTI4031	*
17/32	5/8	3 7/8	DTI4053	*
17/32	5/8	4 1/2	DTI4003	*
5/8	5/8	3 1/2	DTI4032	*
5/8	5/8	3 7/8	DTI4054	*
5/8	5/8	4 1/2	DTI4004	*
11/16	5/8	3 7/8	DTI4055	*
11/16	5/8	4 1/2	DTI4005	*
3/8	1	3 7/8	DTI1505	*
3/8	1 1/4	3 7/8	DTI1614	*
3/8	1 1/4	5	DTI1610	*
7/16	1 1/4	3 7/8	DTI1612	DTI1612D
7/16	1 1/4	5	DTI1617	DTI1617D
1/2	1 1/4	3 7/8	DTI1601	DTI1601D
1/2	1 1/4	5	DTI1602	DTI1602D
9/16	1 1/4	3 7/8	DTI1622	DTI1622D
9/16	1 1/4	5	DTI1623	DTI1623D
5/8	1 1/4	3 7/8	DTI1632	DTI1632D
5/8	1 1/4	5	DTI1633	*
11/16	1 1/4	3 7/8	DTI1642	*
11/16	1 1/4	5	DTI1646	*
3/4	1 1/4	3 7/8	DTI1651	*
3/4	1 1/4	5	DTI1693	*
3/4	1 1/4	5 7/8	DTI1662	DTI1662D
13/16	1 1/4	3 7/8	DTI1661	*
13/16	1 1/4	5	DTI1664	*
7/8	1 1/4	3 7/8	DTI1671	*
7/8	1 1/4	5	DTI1673	*
1	1 1/4	3 7/8	DTI1691	*
1	1 1/4	5	DTI1697	*

* Available upon request.

CLINCHER® WRAP AROUND DIES

CLINCHER® Wrap Around Dies are available in three types:

Fine Toothed Steel Dies:	for low to ultra high torque applications on carbon steel tubulars including tubing, casing, and drill pipe
Smooth Faced Aluminum Dies:	for low to moderate torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars
GRIT FACE™ Dies:	for low to high torque applications on fiberglass and corrosion resistant alloy (stainless steel) tubulars where the use of steel dies is prohibited as well as on carbon steel tubulars where reduced marking is desired

CLINCHER® Dies are designed to match the OD of the tubing, casing, coupling, or accessory being made up or broken out. Each die is stamped on the top or side to identify its size. Using Fine Toothed Steel Dies which are slightly larger than the tubular is acceptable provided the difference in diameters is less than 3/32" (0.093"). Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required. **Note:** The use of improperly sized dies can result in reduced torque capacity, increased pipe marking, and reduced die life.

CAUTION: Do not attempt to grip tubular diameters which are larger than the dies being used. Failure to observe this precaution can result in damage to the tubular or tong jaws.

In emergencies where correct die sizes are unavailable, some operators have successfully used two different sizes of dies to accommodate unusual, nonstandard diameters.

CLINCHER® Wrap Around Dies are manufactured in specific diameters to match standard tubing and casing diameters, API coupling diameters, selected work string connection diameters and certain commonly used premium connection coupling diameters. **CLINCHER®** Wrap Around Dies should not be used on tubulars which are larger than the nominal die size. Steel Toothed Dies can be used on tubulars which are no smaller than 3/32" (0.093") less than the nominal die size. Aluminum and **GRIT FACE™** Dies should be matched with the specific tubular diameters required.

Note: Fine Toothed Steel Dies are normally stocked in our Broussard, Louisiana facility. A partial listing of commonly manufactured sizes is shown below. Aluminum and **GRIT FACE™** Dies are normally made to order although a limited range of sizes and small quantities may be available from stock. Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

CLINCHER® WRAP AROUND DIES

Typical Wrap Around Die Nomenclature for CLE14000 CLINCHER® Tong Jaws Size 14" x 10 3/4"

BUC 10750-xxxx Fine Toothed Steel Dies for jaws (2 reqd per tong)

BUCA 10750-xxxx Aluminum Dies for jaws (2 reqd per tong)

BB 10750-xxxx **GRIT FACE™** Dies for jaws (2 reqd per tong)

ORDERING EXAMPLE: Fine Toothed Steel Dies are needed to run 8 5/8" OD tubing,
Qty. two (2) BUC 10750-8625 dies for jaws
(replace xxxx with size reqd in inches)

BUC 10750-xxxx: Fine Toothed Steel Dies for Tong
8.625 9.625 10.750

BUCA 10750-xxxx: Aluminum Dies for Tong
8.625 9.625 10.750

BB 10750-xxxx: **GRIT FACE™** Dies for Tong
8.625 9.625 10.750

Contact SUPERIOR Manufacturing & Hydraulics for information concerning availability of stock and special die sizes.

Gripping Diameter as a Function of Die Thickness

Nominal Jaw and Dovetail Die Adapter Size	Jaw Assembly Part Number assembly consists of two jaws c/w pins and rollers	dovetail jaw part number	nominal jaw size	Jaw gripping range when dressed with 1 1/4" wide xx.xx" long dovetail strip dies with thickness of:							
				0.8125 13/16 undersized	0.75 3/4 undersized	0.6875 11/16 undersized	0.625 5/8 undersized	0.5625 9/16 undersized	**0.5 1/2 STANDARD**	0.4375 7/16 oversized	*<<dovetail die thickness* *<<pipe application*
14 x 14.375	CJDT14H14375	14H14375L & 14H14375R	14.375	13.750	13.875	14.000	14.125	14.250	**14.375**	14.500	maximum pipe OD for die & jaw
14 x 14	CJDT14H14000	14H14000L & 14H14000R	14.000	13.375	13.500	13.625	13.750	13.875	**14.000**	14.125	maximum pipe OD for die & jaw
14 x 13.625	CJDT14H13625	14H13625L & 14H13625R	13.625	13.000	13.125	13.250	13.375	13.500	**13.625**	13.750	maximum pipe OD for die & jaw
14 x 13.375	CJDT14H13375	14H13375L & 14H13375R	13.375	12.750	12.875	13.000	13.125	13.250	**13.375**	13.500	maximum pipe OD for die & jaw
14 x 12.750	CJDT14H12750	14H12750L & 14H12750R	12.750	12.125	12.250	12.375	12.500	12.625	**12.750**	12.875	maximum pipe OD for die & jaw
14 x 12	CJDT14H12000	N/A	12.000	11.375	11.500	11.625	11.750	11.875	**12.000**	12.125	maximum pipe OD for die & jaw
14 x 11.750	CJDT14H11750	14H11750L & 14H11750R	11.750	11.125	11.250	11.375	11.500	11.625	**11.750**	11.875	maximum pipe OD for die & jaw
14 x 10.75	CJDT14H10750	14H10750L & 14H10750R	10.750	10.125	10.250	10.375	10.500	10.625	**10.750**	10.875	maximum pipe OD for die & jaw
14 x 10.625	CJDT14H10625	14H10625L & 14H10625R	10.625	10.000	10.125	10.250	10.375	10.500	**10.625**	10.750	maximum pipe OD for die & jaw
14 x 10.25	CJDT14H10250	N/A	10.250	9.625	9.750	9.875	10.000	10.125	**10.250**	10.375	maximum pipe OD for die & jaw
14 x 9.875	CJDT14H09875	14H09875L & 14H09875R	9.875	9.250	9.375	9.500	9.625	9.750	**9.875**	10.000	maximum pipe OD for die & jaw
14 x 9.625	CJDT14H09625	14H09625L & 14H09625R	9.625	9.000	9.125	9.250	9.375	9.500	**9.625**	9.750	maximum pipe OD for die & jaw
14 x 8.625	CJDT14H08625	14H08625L & 14H08625R	8.625	8.000	8.125	8.250	8.375	8.500	**8.625**	8.750	maximum pipe OD for die & jaw
14 x 7.625	CJDT14H07625	14H07625L & 14H07625R	7.625	7.000	7.125	7.250	7.375	7.500	**7.625**	7.750	maximum pipe OD for die & jaw
14 x 7	CJDT14H07000	14H07000L & 14H07000R	7.000	6.375	6.500	6.625	6.750	6.875	**7.000**	7.125	maximum pipe OD for die & jaw
14 x 6.625	CJDT14H06625	14H06625L & 14H06625R	6.625	6.000	6.125	6.250	6.375	6.500	**6.625**	6.750	maximum pipe OD for die & jaw
14 x 5.5	CJDT14H05500	14H05500L & 14H05500R	5.500	4.875	5.000	5.125	5.250	5.375	**5.500**	5.625	maximum pipe OD for die & jaw
14 x 5	CJDT14H05000	14H05000L & 14H05000R	5.000	4.375	4.500	4.625	4.750	4.875	**5.000**	5.125	maximum pipe OD for die & jaw
***CLINCHER®** part number for Straight Tooth Dovetail Dies>>*				*DTI1664*	*DTI1693*	*DTI1646*	*DTI1633*	*DTI1623*	***DTI1602***	*DTI1617*	
***CLINCHER®** part number for Diamond Toothed Dovetail Dies>>*								*DTI1623D*	***DTI1602D***	*DTI1617D*	

Splined jaws and splined wraparound dies for CLINCHER® 14" Casing Tong

Nominal wraparound tong jaw size	Splined Jaw Assembly Number *assembly consists of two jaws c/w pins, rollers, clips and clip bolts*	splined jaw roller part number *two pcs reqd per set*	splined jaw pin part number *two pcs reqd per set*	top clip part number for tong jaws *two pcs reqd per set*	bottom clip part number for tong jaws *two pcs reqd per set*	available wraparound die series (two dies are required to dress tong jaws - excludes any dies required for couplings)		
						fine tooth steel dies for tong	**GRIT FACE™** dies for tong	non-marking aluminum dies for tong
14 x 7 5/8 - 4 1/2	CJ-LF-14A	14031-02 w/ Bushing 22DU24	14063	72033	72033	BUC7625-nnnnn	BB7625-nnnnn	BUCA7625-nnnnn
14 x 10 3/4 - 7 5/8	CJ-LF-14B	14062 w/ Bushing 22DU24	14063	BUCS10707	BUCS10707	BUCM1075-nnnnn	BB1075-nnnnn	BUCA1075-nnnnn
14 x 11 3/4 - 7 5/8	CJ-LF-14C	14062 w/ Bushing 22DU24	14063	CLEBU1121	CLEBU1121	CLEBU1175-nnnnn	BB1175-nnnnn	BUCA1175-nnnnn
14 x 14 - 10 3/4	CJ-14A	14059-01	76013-01	14618	14618	CLE1400-nnnnn	BB1400-nnnnn	N/A

-nnnnn indicates size be designated by replacing "nnnnn" sequence with size required (in inches) to three decimal places; i.e., 4.500 for 4 1/2" OD casing.

Note: **CLINCHER®** wraparound dies are machined to specific casing, tubing, coupling or accessory diameter. Additional dies must be orderd to match specific coupling diameters associated with accessories or special clearance premium tubular connections.

ASSEMBLY INSTRUCTIONS

FASTENER LUBRICATION AND MAKE UP TORQUE REQUIREMENTS

Most bolts, nuts, and other threaded components are to be lubricated with Never-Seez or equivalent before assembly. Certain fasteners are to be assembled using permanent or removable Loctite as indicated in the assembly instructions. All tapered pipe threads are to be treated with a Teflon based pipe dope to assist in makeup and prevent leakage.

CAUTION: Do not use teflon tape. Improper application of teflon tape can cause joint failures. Teflon tape can release large particles which can plug small passages in hydraulic equipment.

All standard fasteners used in **CLINCHER®** products are to be GRADE 8 or better. DO NOT SUBSTITUTE lessor grades of fasteners. All fasteners are to be made up to the torque charted below. Failure to properly assemble these fasteners can result in their loss, product malfunction, and ultimately result in situations where personnel can be exposed to dangerous situations.

TONG FASTENERS		
Size	***Application***	***Torque***
1/4 - 20 NC	door switch mounting bolts	10 ft lbs
3/8 - 16 NC	tong plates, brake bands, brake guards, front followers, clip bolts	33 ft lbs
1/2 - 13 NC	motor mounts, cage plate spacer bolts, bearing caps	93 ft lbs
5/8 - 11 NC	top and bottom tong plates, bearing caps	180 ft lbs
3/4 - 10 NC	hanger bolts	317 ft lbs
7/8 - 14 NF	cam follower allen head nuts	63 ft lbs
1 - 12 NF	dumbell roller	*
1 1/2 - 12 NF	idler shaft	1,200 ft lbs

* Tighten until all slack is removed, but dumbell roller is still free to rotate by hand.

LUBRICATION STANDARDS

Bearings and gears must be lubricated to minimize friction, cool, exclude foreign matter, and prevent corrosion. **CLINCHER®** recommends using Texaco Marfak MP 2 or equivalent for all grease zerts, roller bearings, and bushings. Gears located within the clutch housing or between the tong plates are to be heavily lubricated using PLUSCO 855 or equivalent.

ASSEMBLY INSTRUCTIONS

This section pertains to the physical assembly of the **CLINCHER®** CLE14000 Power Tong. Section 9 illustrates the individual sub assemblies in more detail. The purpose of this section is to guide the technician in the order of assembly as we would accomplish in the manufacturing process at our plant. Use this section as a guide to help you familiarize yourself with the component parts of the CLE14000-05. We have included drawings on the following pages to aid in the assembly. The drawings are laid out in the order in which you would assemble/disassemble the unit.

Order of Assembly:

1. Locate suitable working height. Approximately 6" above your waist. Tong Assembly Stands are available from Superior Manufacturing & Hydraulics, Inc. which are custom made for tong service work.
2. Install Bottom Tong Plate PN 14001-S1-03, on Assembly Stand.
3. Bolt Mid Body PN 14003-05 to Bottom Tong Plate PN 14001-S1-03, with (12) 5/8"-11 x 1 3/4" HHCS PN 1158, (12) 5/8"-11 x 2 1/4" HHCS PN 201 (for Side Handles and Spring Hanger Brackets), (24) 5/8" Lockwasher PN 1151, and (3) 5/8"-11 x 1" SHCS PN 1153.
4. Press Bearing PN 1903 into Secondary Gear Bottom Retainer Bearing Cap PN 55041.
5. Install Secondary Gear Bottom Retainer Bearing Cap Assembly onto Bottom Tong Plate using (4) 5/8"-11 x 1 3/4" Bolt PN 1158 with (4) 5/8" Lockwasher PN 1151, and (4) 3/8"-16 x 1/2" Set Screws PN 1029. Install 3/4" Flush Plug PN 1610 into Bottom Retainer Bearing Cap PN 55041.
6. Press Bearing PN 1902 into Bottom Pinion Bearing Cap PN 55036.
7. Install Bottom Pinion Bearing Cap Assembly onto Bottom Tong Plate using (4) 5/8"-11 x 1 1/4" Bolt PN 1156 with (4) 5/8" Lockwasher PN 1151, and (2) 3/8"-16 x 1/2" Set Screws PN 1029. Install 1/8" Flush Plug PN 1607 into Bottom Pinion Bearing Cap 55036.
8. Dumbell Roller Assembly:
   a) Install (2) 1/8" NPT Zert PN 1001 on Dumbell Roller Shaft PN 76025-A.
   b) Install 1"-12 Low Profile Nylock Nut PN 1213 onto Dumbell Roller Shaft PN 76025-A.
   c) Press (1) Bearing Spacer PN 55192 and Aluma Bronze Bushing PN 55191 into end of Dumbell Roller PN 55025-B.
   d) Install Inner Bearing Race Spacer PN 55027-D into opposite end of Dumbell Roller PN 55025-B. Install second Bearing Spacer and Aluma Bronze Bushing.
   e) Install 1"-12 LP Nylock Nut PN 1213 on other end of each Dumbell Shaft PN 76025-A.
9. Idler Gear Assembly:
   a) Press Bearing PN 1905 into Idler Gear PN 76049.
   b) Install (2) Snap Rings PN 1926 in Idler Gear PN 76049.
   c) Press Idler Gear Assembly onto Idler Shaft PN 76051-01.
   d) Install External Snap Ring PN 1946 on Idler Shaft PN 76051-01.

ASSEMBLY INSTRUCTIONS

e) Install Idler Gear and Shaft Assembly into Tong using (3) 5/8"-11 x 2" Bolt PN 1160 with (3) 5/8" Lockwasher PN 1151. Bolt Idler Shaft PN 76051-01 with (1) 1 1/2" Lockwasher PN 1223 and (1) 1 1/2"-12 Nut PN 1222.

f) Install 1/8" NPT Zert PN 1001 at end of Idler Shaft PN 76051-01.

10.1 Primary Outboard Idler Gear Assembly: (2 Units Required)

a) Press Bearing PN 1905 into Primary Idler Gear PN 14069.

b) Install (2) Snap Rings PN 1926 in Primary Idler Gear PN 14069.

c) Install Bottom Idler Race PN 14068B and Top Idler Race PN 14068A onto Primary Idler Gear using (6) 3/8"-16 x 3" SHCS PN 1044.

d) Press Primary Idler Gear Assembly onto Idler Shaft PN 76050-01.

e) Install large end of Shaft Assembly and Primary Idler Gear PN 14069 into Bottom Tong Plate PN 14001-S1-03 with 1 1/2"-12 Nut PN 1222 and 1 1/2" Lockwasher PN 1223.

f) Install 1/8" NPT Zert PN 1001 at opposite end of Idler Shaft PN 76050-01.

g) Slip Outboard Idler Spacer PN 76097 onto Idler Shaft.

h) Install 1 1/2" Lockwasher PN 1223 and 1 1/2"-12 Nut PN 1222 after Top Plate is installed (Instruction 15).

10.2 Outboard Idler Gear Assembly: (2 Units Required)

a) Press Bearing PN 1905 into Idler Gear PN 76049.

b) Install (2) Snap Rings PN 1926 in Idler Gear PN 76049.

c) Press Idler Gear Assembly onto Idler Shaft PN 76050-01.

d) Install large end of Shaft Assembly and Idler Gear PN 76049 into Bottom Tong Plate PN 14001-S1-03 with 1 1/2"-12 Nut PN 1222 and 1 1/2" Lockwasher PN 1223.

e) Install 1/8" NPT Zert PN 1001 at opposite end of Idler Shaft PN 76050-01.

f) Slip Outboard Idler Spacer PN 76097 onto Idler Shaft.

g) Install 1 1/2" Lockwasher PN 1223 and 1 1/2"-12 Nut PN 1222 after Top Plate is installed (Instruction 15).

11. Install Ring Gear PN 14009-02 into Tong Body making sure teeth in Primary Idler Gears PN 14069 align with teeth in Ring Gear.

12. Install (15) Dumbell Roller Assemblies around Ring Gear PN 14009-01 making sure holes in Dumbell Roller Assemblies match up to holes in Bottom Tong Plate PN 14001-S1-03. Hint: Temporarily install Dumbell Roller Shafts thru Dumbell Roller Assembly and Bottom Tong Plate to control position.

ASSEMBLY INSTRUCTIONS

13. Pinion Gear Assembly:
    a) Press Pinion Gear PN 73038 into Bottom Pinion Bearing Cap PN 55036 with Bearing PN 1902.
    b) Install Low Pinion Gear PN 55161BJ onto Pinion Gear PN 73038.
    c) Install Upper Bearing PN 1902 onto Pinion Gear and add Pinion Bearing Bushing PN 14049.
14. Install Secondary Input Gear PN 55048BJ into Bearing PN 1903, which was previously installed into Bottom Retainer Bearing Cap PN 55041.
15. Install Top Tong Plate PN 14002-S1-03 onto Mid Body PN 14003-05 using (12) 5/8"-11 x 1 3/4" HHCS PN 1158, (12) 5/8"-11 x 2 1/4" HHCS PN 201 (for Side Handles and Spring Hanger Brackets), with (24) 5/8" Lockwashers PN 1151, and (3) 5/8"-11 x 1" SHCS PN 1153.
16. Press Bearing PN 1900 into Top Bearing Retainer PN 55066. Install Top Bearing Retainer Assembly onto Secondary Input Gear PN 55048BJ. Bolt to Top Tong Plate using (3) 5/8"-11 x 1 1/4" HHCS PN 1156, (3) 5/8" Lockwasher PN 1151, (1) 5/8"-11 x 1 1/4" SHCS PN 256 and (1) 5/8" Hi Collar Lockwasher PN 1152.
17. Insert Dumbell Roller Shafts with Nylock Nut through Bottom Tong Plate PN 14001-S1-03, through Dumbell Roller Assemblies, and finally through Top Tong Plate PN 14002-03. After installing Dumbell Roller Shafts through Top Tong Plate fasten with 1"-12 LP Nylock Nut PN 1213.
18. High Gear Idler Assembly:
    a) Press (2) Bearing PN 1909 into High Gear Idler PN 55123.
    b) Install Snap Ring PN 1950 into High Gear Idler PN 55123.
    c) Install High Gear Idler Assembly onto High Gear Idler Shaft PN 55124 which is welded to Top Plate.
    d) Install Internal Snap Ring PN 1949 onto High Gear Idler Shaft.
19. Press Bearing PN 1901 into Bearing Retainer PN 55063-S4 which is welded to Top Plate, then install Internal Snap Ring PN 1948 into groove of Bearing Retainer.
20. Install High Gear PN 55119 on Pinion Gear PN 73038.
21. Install High Gear Retainer PN 55122-01 on Pinion Gear PN 73038.
22. Install Ext. Snap Ring PN 1950 on Pinion Gear PN 73038.
23. Low Gear Housing PN 14005is welded on Top Tong Plate PN 14002-S1-03. Install Low Gear Housing Cover PN 14006 using (10) 3/8"-16 x 1 1/4" HHCS PN 1048 and (10) 3/8" Lockwasher PN 1027.

ASSEMBLY INSTRUCTIONS

24. Secondary Bearing Cap Assembly:

    a) Press Bearing PN 1901 into Top Secondary Bearing Cap PN 55143.

    b) If Encoder Assembly is not mounted, install (4) 3/8"-16 x 1/2" Set Screw PN 1029 (using removable Loctite) into Top Secondary Bearing Cap PN 55143. Do not over-tighten. Back off 1/8 turn after contacting Bearing.

    c) Install (1) 1" NPT Flush Plug PN 1611 into Top Secondary Bearing Cap PN 55143.

    d) Install Top Secondary Bearing Cap Assembly onto Secondary Input Gear PN 55048BJ with (3) 1/2"-13 x 1" HHCS PN 1110 and (3) 1/2" Lockwasher PN 1103.

25. Drive Gear Assembly:

    Install Drive Gear PN 55084-02 over Motor Shaft PN 73040. Install (2) Spring Plunger PN 1311 in Drive Gear. Tighten Spring Plungers until good detent action is achieved. Proper adjustment is confirmed when resistance is encountered when shifting gear across detent groove on shaft.

26. Install Motor PN 14194 which includes Motor Shaft PN 73040, Polypack Seal PN 12501437, Seal Retainer PN 55088, and Motor Spacer PN 55085 in Shifting Box with (4) 1/2"-13 x 1 1/4" HHCS PN 1111 and (4) 1/2" Lockwasher PN 1103.

27. Press Self-Lubr. Flange Bearing PN 45092 into Shifting Yoke PN 45072. Install Drive Gear and Motor Shaft Bearing Spacer with Shifter Shaft PN 45143, Shifting Yoke PN 45072, in Shifting Box using 3/8" Flat Washer PN 1025, 3/8" Lockwasher PN 1027 and 3/8"-16 x 3/4" HHCS PN 1046. Press Split Self-Lubr. Flange Bearing PN 45106 onto Shifter Shaft Assembly. Install Ball PN 55071 onto Straight Yoke Handle PN 45142 with 3/8"-16 x 1" Set Screw PN 1030. Install Handle Assembly onto Shifter Shaft Assembly using 3/8" Flat Washer PN 1025, 3/8" Lockwasher PN 1027 and 3/8"-16 x 3/4" HHCS PN 1046.

28. Install A-35 Valve Sections with plumbing on Motor PN 14194.

29. Install Ring Gear Key PN 14050 with (1) 1/2"-13 x 1 3/4" SHCS PN 1107 (using permanent Loctite).

30. Cage Plate Assemblies for Tongs Manufactured After 08/00:

    1) Install (19) Severe Service Cam Follower Assembly PN SSCF1500 (includes Stud PN SSCF1501, Race PN SSCF1502, Bushing PN SSCF1503, & 1/4" Drive Zert PN 1257) in Top Cage Plate PN 14007-01 with (19) Cam Follower Spacer PN 14101, (19) 7/8"-14 Jam Nut PN 1178, and (19) 7/8" Lockwasher PN 1224.

    2) Install (19) Severe Service Cam Follower Assembly PN SSCF1500 (includes Stud PN SSCF1501, Race PN SSCF1502, Bushing PN SSCF1503, & 1/4" Drive Zert PN 1257) in Bottom Cage Plate PN 14008 with (19) 7/8"-14 Jam Nut PN 1178, and (19) 7/8" Lockwasher PN 1224.

    3) Fit Top Cage Plate Cam Followers into Ring Gear groove. Use crane to raise Bottom Cage Plate and fit Bottom Cage Plate Cam Followers into Ring Gear groove. Install (4) Cage Plate Spacers PN 14047 using (4) 1/2"-13 x 9 1/2" HHCS PN 1117-A with (4) 1/2" Lockwashers PN 1103 and (4) 1/2"-13 Nuts PN 1101.

ASSEMBLY INSTRUCTIONS

31. Locking Pin Assembly:
    a) Install Locking Pin Key PN 76127 onto Top Cage Plate PN 14007 using Locking Pin PN 14044 and Flutted Knob PN DK-28.
    b) Install 1/2"-13 x 4 1/2" Bolt PN X2-45 through Locking Pin Key PN 76127, then Top Cage Plate PN 14007.
32. Door Assembly and Door Installation:

    Refer to Latching Door Assembly Illustration in Section 9.
33. Door Limiter Switch:
    a) Install (1) 1/4" Street Ell PN 1449 in Door Switch PN SLV1000-01.
    b) Install (1) 1/4" MNPT x 1/4" MJIC 90 Degree PN 1576.
    c) Install (1) 1/4" MNPT x 1/4" MJIC 90 Degree PN 1576 into “tank” port of Door Switch PN SLV1000-01.
    d) Mount Door Switch PN SLV1000-01 on Door Switch Base PN 76128 with (4) 1/4"-20 x 2 1/4" Bolt PN 110, and (4) 1/4"-20 Nylock Nut PN 212.
    e) Mount Assembly to (2) Door Switch Base Mount PN 45067-S7 (Base Mounts should be welded to Top Tong Plate) with (2) 3/8"-16 x 1" Bolt PN 1047 and (2) 3/8" Lockwasher PN 1027.
34. Door Switch Adjustment Instructions:
    a) Loosen 3/8"-16 x 1/2" Set Screws PN 1029 to align recess in Door Switch Adjustment Sleeve PN 76131 with Roller on Door Switch PN SLV1000-01. Tighten Set Screws PN 1029.
    b) Loosen 1/4"-20 Nylock Nuts PN 212 and slide Door Switch PN SLV1000-01 forward until fully seated in recess in Door Switch Adjustment Sleeve PN 76131. Tighten Nylock Nuts PN 212.
    c) Connect Tong to Power Unit and actuate motor while in low gear. Verify Ring Gear stops rotating when Tong Door is opened.
35. Spring Brake Assembly Adjustment Instructions:
    a) Tighten 3/8"-16 Nylock Nut PN 213 until 3/8"-16 x 3" Eye Bolt PN 58055 causes Spring PN 74043 to elongate approximately 3/4". Repeat for other Spring.
    b) Run in 5/8"-11 x 1 1/4" Socket Head Set Screw PN 58063 (located in Brake Band Adjustment Block PN 14048) until it contacts Brake Arm PN 14056. Back off 1 1/2 turns to create gap. Repeat for other Brake Arm Assembly.

OPERATION

Suspension

A) Tong should be hung by 7/8" IWRC minimum O.D. wire cable with a 31 ton minimum breaking strength. It should be hung as close to the center of the drill rotary without interfering with operation of drill string and lifting equipment. It is recommended the operator make use of the **CLINCHER®** Lift Cylinder. The **CLINCHER®** Lift Cylinder incorporates a hydraulic cylinder and manual lift spring. The hydraulic cylinder portion is used to assist in the raising and lowering of the tong and backup while the spring allows for movement during make-up and break-out.

WARNING: The suspension system must allow the tong to easily move down a distance equivalent to the thread make-up length. If significant resistance is encountered the suspension system may be subject to load which could cause its failure, damage equipment, or expose personnel to severe or fatal hazards.

B) Assure that the tong is suspended in level manner. Both tong and backup must be level at the point they contact the tubular. Using adjustment screws and slots in rigid hanger assembly, adjust tong so that it hangs level on horizontal axis and is parallel to tubular on vertical axis. If using 3 point bridle, use turnbuckles to adjust tong so it hangs level.

C) Make certain that floor space is adequate to maneuver tong on and off pipe. The space must be clear of obstructions to allow safe and unrestricted operation.

D) Attached 1 1/4" IWRC minimum wire cable with a 79.9 ton minimum or better breaking strength, as a tong back up line at 90 degree angle to tong and at the same level to insure proper readout of torque indicator. You should always have snubbing line attached. Use of a integral hydraulic backup is safer than manual backup, but operators should maintain additional safety of snubbing line to prevent injury in case of hydraulic failure or the failure of operator to have backup properly applied to tubular. This equipment generates extreme torque and should be used with caution.

Jaw and Wrap Around Die Installation

A) Be sure all power to unit is off, and power unit is shut down. Disconnect hydraulic hoses.

B) Determine O.D. of tubular to be made-up or broken-out. Use proper dies to bite O.D. of tubular and insert as follows: Remove jaw assembly from tong. Remove upper die retainer clips. Insert die into jaw. Reinstall clips and clip retainer bolts. Reinstall jaws into cage plates, install pivot pins and reattach springs.

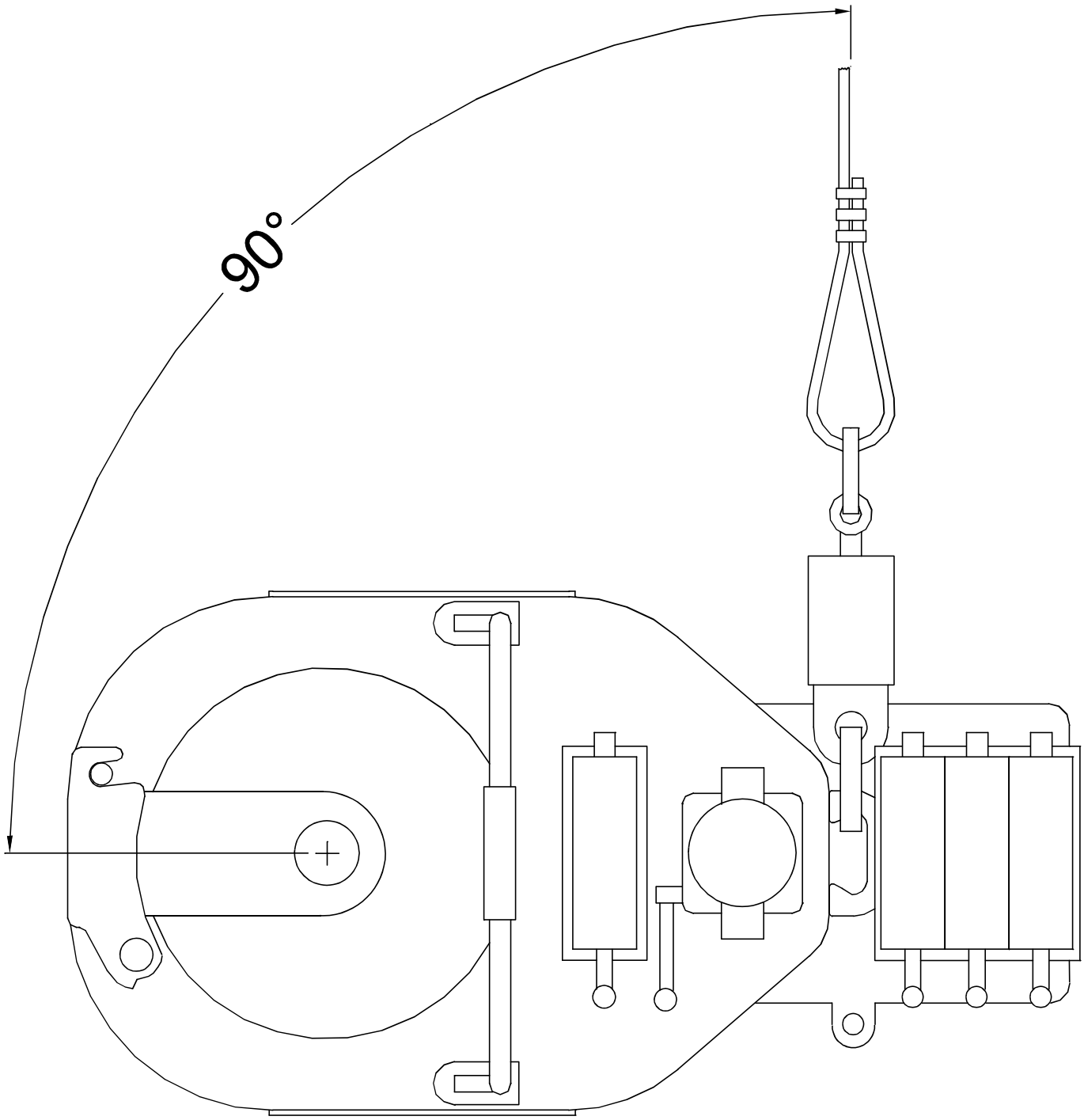
OPERATION

Hydraulic Lines

A) Be sure all power to unit is off, and power unit is shut down.

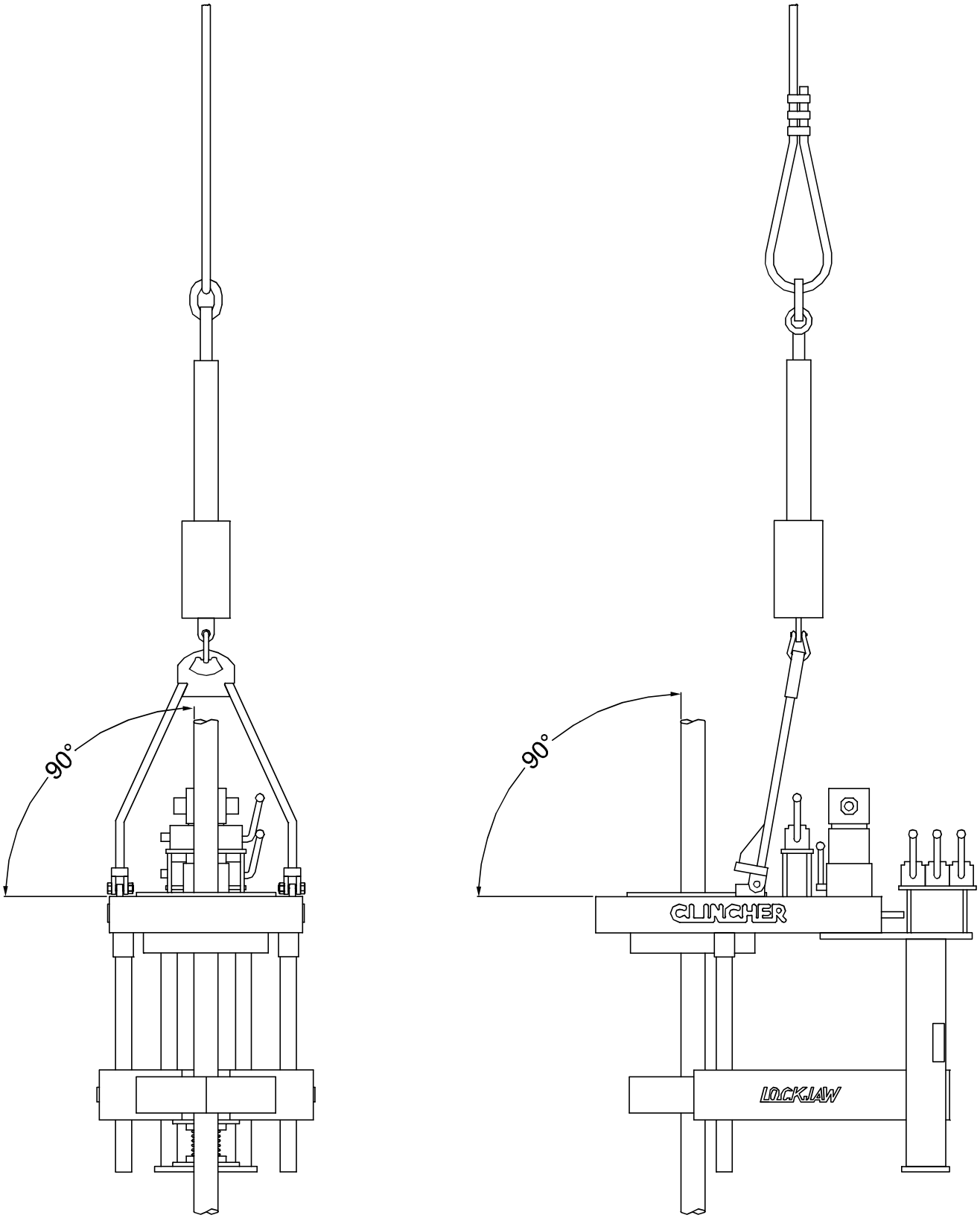
B) Always inspect hoses prior to installation for abrasions, kinks, and other visible damage.

C) Install hydraulic supply hose and hydraulic return hose between tong and hydraulic power unit. Be advised that the standard installation on **CLINCHER®** tong calls for 1" Hydraulic Supply hose and 1-1/4" Hydraulic Return hose. The differing hoses eliminates the possibility of attaching the wrong hose to the wrong outlet while at the same time reducing back pressure in your hydraulic system.



TYPICAL SNUB LINE INSTALLATION

NOTE: SNUB LINE IS PERPENDICULAR
TO AXIS OF TONG



TYPICAL TONG INSTALLATION

NOTE: TONG IS PERPENDICULAR
TO TUBING

OPERATION

Tong Operation

A. Insure proper dies are installed. Connect hydraulic hoses, verify reservoir is full of hydraulic fluid and insure suction valve is open.

B. Open bypass valve to hydraulic system, then check to make sure all hose connections are secure and hydraulic system is free of leaks.

C. Be certain door is completely closed before operation to insure safe operation. The **CLINCHER®** CLE14000 is equipped with a door switch, which prevents operation of the tong when door is even partially open.

D. Use power unit to start up procedure as outlined in your owners manual supplied by the manufacturer.

E. In the event hoses are not tightened securely, possible failures to hydraulic system can occur.

   1) If pressure supply hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit, resulting in increased RPM in the power unit.

   2) If return line hoses are restricted or flow is blocked, pressure will increase in the hydraulic power unit and the hydraulic system to the tong itself, resulting in the tong motor increasing to maximum pressure and possible motor seal failure.

F. After completion of A through E restart the power unit and allow engine to idle for approximately 10 minutes. Slowly close bypass valve to allow circulation of hydraulic oil through tong and hoses. Place shifting lever into low and rotate several times. Repeat in reverse. If correct jaw-die combination is installed, the unit is now ready to run pipe.

G. Adjust height of tong to proper height, using the control valve located all the way to the right of rear valve bank assembly.

H. Stand in the normal operators position, insert the locking pin into the rear cage plate hole (on operators side). This pin allows ring gear to rotate clockwise (make-up) and engage the can to close jaws on pipe.

I. Rotate ring gear clockwise by pushing motor control lever on the front valve bank assembly forward until jaws lock on pipe and continue to rotate until desired amount or torque is applied.

J. After correct amount of torque specific to that connection has been applied, release tong jaws by pulling back on motor control lever until jaws release and throat in cage plate is aligned with door opening. Open door.

K. High and low gear is adjusted by use of shifting lever PN 45060, located to the left side of the shifting housing. With the lever in the upwards position the tong is in high gear. With the shifting lever in the downward position, the tong is in low gear.

OPERATION

Tong Operation

After completing the makeup or breakout cycle the jaws are opened by reversing the tong motor to drive the ring gear and cam surfaces in the opposite direction until the reversing pin contacts the ring gear shoulder. Springs are used to return the jaws to their fully open position.

The Tong's cage plate braking system is self adjusting to compensate for brake band wear. Field adjustments are not required under normal conditions.

MAINTENANCE

CLINCHER® recommends that owners of **CLINCHER®** Hydraulic Power Tongs, **CHROMEMASTER™**s, and accessories adapt a regularly scheduled maintenance program. Implementation of this type of program offers several benefits. First you increase the life of your equipment, secondly, you may find a problem before it escalates to a costly repair or down time on the job, and most important, prevent injury to operating personnel.

A major inspection (described at the end of this section) should be carried out if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out.

Routine Maintenance

Cleaning - Upon return from each and every job:

A) Pre-wash unit to remove majority of dirt and grease build up as to allow removal of dies, and inspection of overall condition of unit.

B) Remove and inspect dies from tong. Note any missing or damaged die retainers and/or die retainer bolts.

C) Remove side jaws from tong and inspect side jaw for missing or broken parts, damaged splines, broken ears (locking hooks on front portion of side jaws).

D) Clean and inspect side jaws, jaw pins, jaw rollers for damage or excessive wear. Lubricate pins and rollers, and reinstall in tong.

E) Inspect hanger and all hoses for wear, replace as necessary.

F) Inspect hanger assembly to assure all parts are returned and in operating condition. (*i.e.* H-Plates, spring, leg springs, leg spring caps and pins)

G) Replace jaw pins and rollers in tong.

H) Lubricate tong's cam followers (upper and lower), dumbell roller shafts (upper and lower zerts), door shaft, center idler gear shaft, outboard idler gear shafts (4), pinion gear and secondary gear assemblies (Pinion gear and secondary gear assemblies are installed with sealed bearings. There are no provisions to grease these bearings. However, if replaced by non-sealed bearings, the 1/8" NPT flush plugs should be replaced with zerts PN 1001 and both gear assemblies should be added to the regular lubrication schedule.), low gear housing, and shift housing (2 zerts each), and re-pack tong body cavity.

I) Install dies of a size needed for testing purposes, and attach hydraulic power unit to tong. Before energizing power unit make certain no one is working on tong and all tools and parts are removed from the tong.

MAINTENANCE

J) With the proper dies installed in the tong, place reversing pin into the make-up position, set tong into low gear and operate tong through several cycles of locking, biting, and torqueing to required torque. Change reversing pin to break-out position and repeat. Repeat same procedure in high gear.

Note: Torque developed in high gear is considerably less than torque developed in low gear.

K) Test door interlock system by opening door slightly with tong rotating. (Remove test mandrel for this procedure.) The tongs rotation should stop. If tong rotation fails to stop, close door, cease rotation, deactivate power unit, and inspect door interlock switch for damage. Insure that adjustment collar is oriented to allow wheel of door switch to fit into recess on collar.

Warning: If door switch system is not functioning properly tong must not be used.

L) Reinspect tong hydraulic system for leaks.

M) If at this time the unit is functioning as intended, replace all covers and grease splines in tong, tape or grease spools on control valves (to prevent paint from adhering to polished spool surface), prime and paint unit for storage.

MAINTENANCE

Recommended Lubrication Schedule Performed after Completion of Each Job

Hydraulic Tong

A) Cam followers: upper and lower (all)
B) Dumbell roller shafts: upper and lower (all)
C) Door shaft
D) Center idler shaft
E) Outboard idler shaft (4)
F) Low gear housing (2 zerts)
G) Shift housing (2 zerts)
H) Re-pack tong cavity
I) Pinion and secondary gear shafts (if sealed bearings have been replaced by non-sealed bearings)
J) Jaw rollers and pins. Remove jaw pins and rollers, clean and lubricate with gear grease.
K) Inspect hydraulic fluid for foreign material and contaminants. Filter or replace. You must filter or replace entire system including power unit tank and lines along with tong to insure all contaminants are removed.

Annual Major Maintenance

Inspection and Repair

Routine preventative maintenance will significantly extend the operating life of your equipment, reduce operating cost and avoid downtime. **CLINCHER®** recommends a program of frequent routine inspection, and if equipment is suspected to have been damaged during transit or is to be mobilized to a remote location where maintenance operations are difficult to carry out, perform the following:

A) Visually inspect components on power tong which could possibly have been damaged either during operation or transit. *i.e.* Damage to hanger assembly, mounting legs, or hydraulic valve assembly.

B) Check test date. Ensure that a load test and inspection was carried out within the last 9 months.

C) Check ring gear. Check for any signs of damage or wear.

D) Remove motor and valve assembly from tong body.

E) Check motor seal. Apply hydraulic power, run motor and visually check motor seal for any signs of leakage.

F) Check drive gear, high and low pinion gears. Check for excessive sign of wear on motor gear.

G) Check condition of control valve spools. Activate valves and check for any sign of wear, pitting, or scoring of the chrome surface of spools. If spool is damaged in any way, the complete section must be changed out. Spools are not interchangeable.

MAINTENANCE

H) Check gear selector and shaft. Visually inspect shifting shaft for alignment and straightness.

I) Check Hi/Low Gear assembly. Visually inspect high and low clutch and gears for any sign of chipped, broken, or worn teeth.

J) Check dumbell rollers, shafts, and bushings. Check for excess movement on either bearings, bushings, shafts, or dumbells.

K) Check idler gears and center pinion shaft gears and bearings. Check that there are no signs of worn, chipped, or broken teeth on idler and center pinion shaft gears.

L) Check door bearings. Visually check excess movement on bearings at door assembly. If excess movement is found, door must be removed making careful note of bearing washer positions for reassembly.

M) Check door switch system. Visually check that door switch valve has sufficient strength to hold door in closed position. If this is not the case, then repairs are required.

N) Check door safety device. Functionally check tong door safety switch. Engage low gear, open tong door and push rotor control lever forward as if to rotate rotor. If safety device is operational then the rotor will not rotate.

O) Check lifting hanger test date. Check lifting hanger for damage. Ensure that a load test and inspection was carried out within the last 9 months.

P) Check condition of all hydraulic hoses and fittings. Visually inspect all hydraulic hoses fitted to the tong for any signs of leaks, cuts, or wear.

Q) Reinstall all parts which were removed for inspection and/or damage. Connect to hydraulic power supply and function test operation of tong in high, low, forward, and reverse. Torque test utilizing appropriate dies and test mandrel. Test operation of lift cylinder.

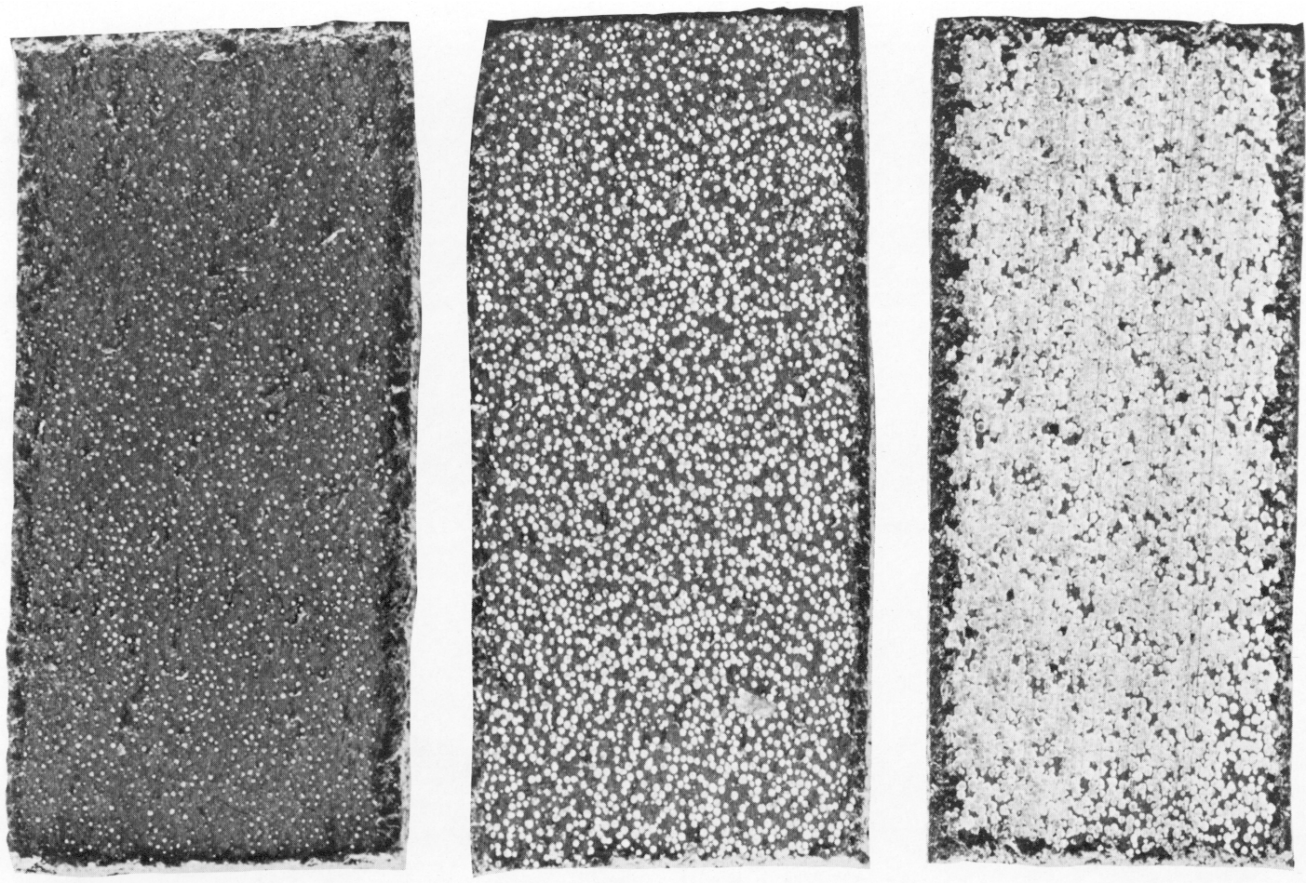
R) Inspect power unit system according to manufactures specifications.

S) Lubricate tong according to maintenance schedule preceding this section.

T) Paint, remembering to mask off surfaces not intending to paint with grease or masking tape.

U) Complete dated inspection report giving details of all duties performed along with complete list of items replaced.

DU® BEARING DRY WEAR PROCESS



1. 2. 3.

1. Running-in completed. Low wear rate starts when up to 10% of the bronze is exposed.

2. Typical surface appearance when DU® bearing approaches its half life with 40% to 50% of the bronze exposed.

3. Bronze is beginning to smear near the end of DU's useful life as a dry bearing. Over 75% of the bronze is visible at the surface.

For additional information about DU bearings, please contact Garlock Bearings Inc,
700 Mid Atlantic Parkway, Thorofare, New Jersey 08086. **(609) 848-3200** FAX: (609) 848-5115

TROUBLE SHOOTING

HYDRAULIC SYSTEM

Hydraulic Pump Making Excessive Noise:

	Problem	Solution
A)	Restricted or clogged intake line	Clean line, check for contamination.
B)	Contaminated fluid	Flush system, change fluid.
C)	Restricted vent	Clean or replace air vent.
D)	Air in fluid	Check for leaks and be certain fluid suction in tank is well below hydraulic fluid in reservoir.
E)	Damaged or worn parts	Repair or replace damaged parts, check fluid for contamination.
F)	Excessive RPM	Check PTO, gears and recommended speed to assure proper pump is installed for operation.
G)	Increased friction	Make sure pump has been assembled using correct torque valves.
H)	Damaged or worn relief valve.	Replace relief valve.
I)	Damaged or worn check valve.	Replace check valve.
J)	Restricted discharge	Check to make sure relief valve is set to proper pressure.
K)	Valve system restricted	Inspect and repair or replace defective parts, check system for contamination.

TROUBLE SHOOTING

Excessive Wear to Hydraulic Components:

	Problem	Solution
A)	Fluid contamination	Flush fluid system, replace with new fluid.
B)	Components misaligned	Inspect and realign.
C)	High operating pressures	Gauge and set to proper pressure.
D)	Exhausted fluid (depletion of additives)	Flush fluid system, replace with new fluid.
E)	Air in fluid	Check for leaks, and be certain fluid suction in tank is well below hydraulic fluid in reservoir.
F)	Shortened bearing life	Check alignment, insure proper lubrication to non-sealed bearings.

HYDRAULIC TONG SECTION

Slow Tong Speed:

	Problem	Solution
A)	Restricted supply line	Clear supply line and check intake on reservoir.
B)	Low fluid level	Add fluid to proper volume.
C)	Air leak	Locate and repair leak.
D)	Pump speed insufficient	Assure proper pump speed for application.
E)	Damaged or worn equipment	Isolate pump and check pressure to determine whether motor or pump is defective. Repair or replace defective part.
F)	Pump not primed	Check fluid viscosity and restrictions of intake line. Replace fluid if inadequate for operating temperature.
G)	Low or no flow from supply line	Check to assure couplings are securely fastened.
H)	Hydraulic bypass valve malfunction	Inspect. Adjust unloading pressure. Replace or repair as necessary.

TROUBLE SHOOTING

Insufficient Torque:

	Problem	Solution
A)	Door switch malfunctioning	Check to make sure door is completely closed. Inspect door switch and dump valve. Replace or repair door switch and/or dump valve.
B)	Relief valve malfunctioning	Relief set too low, broken valve spring, contamination or defective seals.
C)	Damaged or worn pump parts	Inspect, repair or replace.
D)	Slow pump speed	Assure proper pump speed for application.
E)	Improper system fluid	Check fluid viscosity and replace fluid if inadequate for operating temperature.
F)	Directional control valve set improperly	Check relief and directional control valve. Neutral should return slightly to reservoir.

Hydraulic Tongs System:

	Problem	Solution
A)	Damage to motor	Inspect, repair or replace.
B)	Restriction of supply line, excessive back pressure	Check to assure couplings are securely fastened.
C)	Defective gauge or load cell	Inspect, repair or replace. Assure unit has been calibrated to proper arm length. NOTE: When using **CLINCHER®** integral backup system, it is the length of backup arm, NOT the tong arm length.

TROUBLE SHOOTING

Difficulty Shifting Gears:

	Problem	Solution
A)	Broken key in shifting yoke	Inspect and replace key stock in shifting yoke.
B)	Worn or damaged shifting yoke pins	Inspect and replace broken or worn pins.
C)	Insufficient lubrication	Pump grease into both zerts located on shift housing.
D)	Detent ball bearing spring set too tight	Inspect and relieve pressure by adjusting set screw on shifting gear PN 55084.

Failure to Grip Tubulars:

	Problem	Solution
A)	Jaws move out from neutral, but fail to penetrate pipe. Tong not perpendicular.	Inspect die size and replace with correct dies for pipe. Wrong size dies for tubulars. Assure suspension of tong is perpendicular to tubulars. Adjust hanger as necessary.
B)	Jaws fail to move out of neutral. Brake band not tight enough, faulty cam followers, rust debris or damage to jaws.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.
C)	Tong will not release from tubular. Brake band not tight enough, defective cam followers in cage plate, insufficient lubrication to jaw pin and roller.	Inspect for excessive wear on brake band. Inspect and replace defective cam followers. Remove rust and debris from jaws, and jaw pockets. Inspect jaw rollers and pins for wear, flats, and lubrication. Repair, replace, and lubricate as needed.

TROUBLE SHOOTING

Failure to Grip Tubulars:

	Problem	Solution
D)	Tong motor runs but ring gear does not rotate. Broken gears or defective shift in Hydraulic Tongs System.	Inspect and replace defective gears. Inspect and repair or replace defective shifting parts.
E)	Tong binds under light load. Worn or damaged cam followers, dumbell roller bearing or idler bearing.	Inspect and replace defective parts.
F)	Ring gear rotates while control lever is in neutral	Replace control valve.
G)	Shift will not stay in set position. Lost detent ball or spring.	Replace detent ball and spring.
H)	Hydraulic fluid leaking from motor. Damaged or worn motor shaft seal.	Replace motor shaft seal.

RECOMMENDED SPARE PARTS LIST FOR REMOTE AREAS

Quantity	Part Number	Description
1	1250 1437	Seal for Rineer Motor
2	76013-01	Dovetail Jaw Pins (5" – 14 3/8")
2	14059-01	DT Jaw Rollers (5" - 14 3/8")
2	14062	LF Jaw Rollers (7 5/8 - 11 3/4)
2	14031-02	LF Jaw Rollers (4 1/2 - 7 5/8)
6	22DU24	Garlock Bushings for LF Jaw Rollers
2	14063	Low Friction Jaw Pins
8	1001	1/8 NPT Zerts
1	SLV1000-01	Door Switch
1	45072	Shifting Yoke
1	14041	Brake Band Assy 14
8	BUC4019	Jaw Retract Spring
1	DVG35-HMRV	DVG35 Relief Cartridge

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SUPERIOR MANUFACTURING

Pick List

CLE14000-05 / 14" TONG 50K FT/LBS

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00CLE1400005	PICKLIST FOR CLE14000-05 LATCHING DOOR & SPRING BRAKE REV DATE: 07/01/03	each		1	_____
10060	ELBOW FLANGE W168-16-20U SAE CODE 61 1-1/4" 4 BOLT ELBOW FLANGE W/1" NPT	each	M1-B	2	_____
12501437	POLYPACK 1/8" CROSS SECTION 1 7/16 X 1 11/16 X 1/8	each	O1-A	1	_____
1311	SPRING PLUNGER	each	54	2	_____
14001-S1-03	BOTTOM TONG PLATE FOR CLE14000-04 & 05	each		1	_____
14001-S2	BRAKE REAR CLEVIS PIN F/ 14" CASING TONG	each		1	_____
14002-03	TOP PLATE WELDMENT FOR CLE14000-04	each		1	_____
14003-05	MID-BODY WELDMENT PICKLIST	each		1	_____
14006	LOW GEAR HOUSING COVER	each	M1-C	1	_____
14007-01	TOP CAGE PLATE F/14" CASING TONG	each		1	_____
14007-S1	CAGE PLATE STOP F/TOP CAGE PLATE F/14" TONG	each	M1-C	2	_____
14008	BOTTOM CAGE PLATE F/ CLE14000 TONG	each		1	_____
14009-01	RING GEAR W/7.5 CAM ANGLE F/TONG CLE14000-03	each		1	_____
14041	BRAKE BAND ASSY. F/ 14" CASING TONG-PICK LIST	each	WALL 16	1	_____
14042	BRAKE HUB F/14" CASING TONG	each		1	_____
14044	LOCKING PIN	each	M1-D	1	_____
14045	PIVOT PIN F/14" CASING TONG	each		2	_____
14047	CAGE PLATE SPACER	each		4	_____
14049	PINION BEARING BUSHING F/ 14" TONG	each	M1-D	1	_____
14050	RING GEAR KEY F/14" TONG	each	M1-D	1	_____

SUPERIOR MANUFACTURING

Pick List

CLE14000-05 / 14" TONG 50K FT/LBS

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
14056	BRAKE ARM F/14" TONG	each		2	_____
14060	BRAKE REAR CLEVIS F/ 14" CASING TONG	each		1	_____
14067	BRAKE CYLINDER/DUMBELL	each	M1-E	2	_____
14068A	TOP IDLER RACE F/TONG CLE14000-03	each		2	_____
14068B	BOTTOM IDLER RACE F/TONG CLE14000-03	each		2	_____
14069	PRIMARY IDLER F/TONG CLE14000-03	each	M1-E	2	_____
14101	CAM FOLLOWER SPACER F/ SSCF1500	each		19	_____
14130	BAIL SYSTEM ASSEMBLY F/14" TONG	each	WALL17	1	_____
14140-02	LATCHING DOOR ASSEMBLY FOR 14" CASING TONG	each		1	_____
14190	RIGHT SIDE HANDLE WELDMENT PICKLIST	each		1	_____
14191	LEFT SIDE HANDLE WELDMENT PICKLIST	each		1	_____
14192	RIGHT REAR SPRING HANGER PICKLIST	each		1	_____
14193	LEFT REAR SPRING HANGER PICKLIST	each		1	_____
14194	MOTOR DOUBLE STACK SINGLE SPEED W/SHAFT 73040	each		1	_____
14195	A35 VALVE BANK ASSEMBLY	each		1	_____
14615-01	DOOR JAMB	each		1	_____
1607	FLUSH PLUG 1/8" NPT	each	S4-G	1	_____
1610	FLUSH PLUG 3/4" NPT	each	S4-G	1	_____
1611	FLUSH PLUG 1" MNPT	each	S4-G	1	_____
2-013	O RING-7/16"ID 9/16"OD 1/16"WIDTH	each	O2-A	3	_____
2070	DUMP VALVE 1 1/4"	each	M2-E	1	_____

SUPERIOR MANUFACTURING

Pick List

CLE14000-05 / 14" TONG 50K FT/LBS

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
41037	ALUM. WASHER 1.13 ID X 2 OD X .125 TH	each	M3-C	2	_____
45091	SHIFT ASSEMBLY PICKLIST	each	M4-C	1	_____
55025-B	DUMBELL ROLLER-REVISED	each	M5-C	15	_____
55027-D	DUMBELL ROLLER SPACER F/ TAPERED ROLLER BEARING 5 1/2"UHT THRU 20" HT	each	M5-D	15	_____
55036	PINION BEARING CAP-BOTTOM	each	M5-D	1	_____
55041	BOTTOM RETAINER BRNG. CAP	each		1	_____
55048BJ	SECONDARY INPUT GEAR	each	M6-A	1	_____
55063-S5	HANGER PADEYE 3/4" A-36	each	M6-A	1	_____
55066	TOP BEARING RETAINER	each		1	_____
55070	PRIMARY INPUT GEAR	each	M6-B&23-C	1	_____
55076	SHIFTING BOX WELDMENT PICKLIST	each	M6-B	1	_____
55084-02	DRIVE GEAR F/CLE5500	each	M6-B	1	_____
55085	MOTOR SPACER	each	M6-B	1	_____
55088	MOTOR SHAFT SEAL RETAINER	each	M6-B	1	_____
55119	HIGH GEAR	each	M6-C	1	_____
55121-01	MOTOR SHAFT BEARNG SPACER	each	M6-C	1	_____
55122-01	HIGH GEAR RETAINER F/ 5 1/2 HT & 7 5/8 TONG	each	M6-C	1	_____
55123	HIGH GEAR IDLER	each	M6-C	1	_____
55131	SPACER	each	M6-C	1	_____
55142	ENCODER ASSEMBLY F/ 5 1/2 HT 7 5/8 TONG PICKLIST	each	M6-D	1	_____
55143	TOP SECONDARY BEARING CAP	each		1	_____
55161-BJ	LOW PINION GEAR F/ 7 5/8 BJ TONG	each	M6-D	1	_____

SUPERIOR MANUFACTURING

Pick List

CLE14000-05 / 14" TONG 50K FT/LBS

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
55191	DUMBELL ROLLER BUSHING F/5 1/2 UHT TONG	each	M6-D	36	_____
55192	DUMBELL ROLLER SPACER	each	M6-D	36	_____
58051	BRAKE ADJUSTMENT CLEVIS F/ 5 1/2 LOCKJAW TONG MOD.PT# YE-16 YOKE	each	M7-A	2	_____
58052	CLEVIS PIN REID P/N YP-36	each	M7-A	2	_____
58055	EYE BOLT 3/8"-16 X 3" EB-22	each	M7-A	2	_____
58063	SET SCREW 5/8"-11 X 1 1/4" SOCKET HD W/NYLOCK PATCH COARSE THREAD	each	M7-B	2	_____
58099	HIGH PRESSURE CK.VALVE 1"	each	M7-C	1	_____
59049-S2	BOTTOM GREASE PORT F/ TONG CLE5500XHT	each		1	_____
72017	CYL. BRACKET RET. SLEEVE	each	M8-B	2	_____
73038	PINION GEAR F/ CLE7625DP-35 1st.UNIT	each	M8-E	1	_____
74043	EXT SPRING-81041--1.0"OD, .148" WIRE, 2.75" OAL	each	M9-E	2	_____
76025-A	DUMBELL SHAFT NEW STYLE	each	M10-A	13	_____
76049	7 5/8 **CLINCHER®** IDLER GEAR	each	M10-A	3	_____
76050-01	OUTBOARD IDLER SHAFT	each	M10-B	4	_____
76051-01	IDLER SHAFT	each	M10-B	1	_____
76097	OUTBOARD IDLER SHAFT SPACER	each	M10-D	4	_____
76127	LOCKING PIN KEY	each	M10-D	1	_____
76128	DOOR SWITCH BASE WELDMENT PICKLIST	each	M10-E	1	_____
BUC4019	DOOR SPRING #733--EXT. .562" OD, .072' WIRE, 2.88" OAL	each	M11-C	2	_____
BUCST1525	LEG SOCKET ASSY-PICK LIST	each		2	_____
BUCST1575	REAR LEG WELDMENT-PICKLIST	each		1	_____

1-Jul-03
2:37 PM

SUPERIOR MANUFACTURING

Pick List

CLE14000-05 / 14" TONG 50K FT/LBS

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
DK-28	FLUTED KNOB DK-28 1 3/4" 3/8"-16 X 3/4"	each	S2-G	1	_____
KITBOLT-26.1	BOLT KIT FOR CLE14000-05 14" TONG W/LATCHING DOOR & SPRING BRAKE	each		1	_____
KITBRG-26	BEARING KIT F/CLE14000-04 & CLE14000-05 14" TONG W/LATCHING DOOR	each		1	_____
KITFIT-26.1A	FITTING KIT F/CLE14000-05	each		1	_____
KITFIT-26.1A&F	FITTING KIT F/CLE14000-05	each		1	_____
KITFIT-26.1C	FITTING KIT F/CLE14000-05	each		1	_____
SLV1000-01	N.C. SELF LUBRICATED VALVE NORMALLY CLOSED/DOOR S PICKLIST	each	M19-C	1	_____
SSCF1500	1 1/2 SEVERE SERVICE CAM FOLLOWER ASSEMBLY PICKLIST F/CLE14000	each		38	_____
W43-20-20U	FLANGE KIT 1 1/4" FNPT	S2-E		1	_____

26-Jun-03
3:30 PM

SUPERIOR MANUFACTURING

Pick List

14002-03 / TOP PLATE WELDMENT

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
14002-S1-03	TOP PLATE FOR CLE14000-04 & 05	each		1	_____
14005	LOW GEAR HOUSING WELDMENT PICKLIST	each		1	_____
45067-S7	DOOR SWITCH BASE MOUNT	each	M4-B	2	_____
45067-S8	DOOR SWITCH HOSE GUIDE	each	M4-B	2	_____
55063-S3	PINION TOP BEARING RETAINER	each	M6-A	1	_____
55063-S4	BEARING RETAINR F/MTR. SHAFT	each	M6-A	1	_____
55124	IDLER GEAR SHAFT	each	M6-C	1	_____
58038	GAUGE MOUNT	each	M6-F	1	_____

SUPERIOR MANUFACTURING

Pick List

14140-02 / LATCHING DOOR ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
0014140-02	PICKLIST FOR 14140-02 REV DATE: 06/12/03 SEE NOTES F/ 14140-02	each		1	_____
100	HEX NUT 1/4"-20 GR8	each	55	3	_____
1029	SET SCREW 3/8"-16 X 1/2"	each	50	2	_____
105	HHCS 1/4"-20 X 1" GR8	each	55	3	_____
1060	HHCS 3/8"-16 X 2 1/2" GR8	each	51	2	_____
1101	HEX NUT 1/2"-13 GR8	each	51	1	_____
1117-A	HHCS 1/2"-13 X 9 1/2" GR8	each	51	1	_____
1213	NYLOCK NUT LOW PRO 1"-12	each	52	2	_____
14113-01-S1	BOTTOM DOOR PLATE	each		1	_____
14114-01	TOP DOOR PLATE WELDMENT	each		1	_____
14116	DOOR THRUST BUSHING	each	M1-F	2	_____
14118-01	DUMBELL ROLLER GUARD	each		1	_____
14120-01	DOOR SHAFT	each		1	_____
14121	SPACER	each	M1-F	2	_____
14148	DUMBELL ROLLER ASSEMBLY	each		3	_____
14150	RUBBER GUARD	each		1	_____
14151	SUPPORT STRIP	each		1	_____
14681-01	DOOR LATCH WELDMENT	each		1	_____
14682-01	DOOR LATCH PIVOT PIN	each		1	_____
2021	GARLOCK BUSHING 24DU16 1 1/2" ID X 1" DOOR BUSHING	each	S2-G	4	_____
2040	TONG DOOR BUSHING	each	M2-C	2	_____
213	NYLOCK NUT 3/8"-16 GR8	each	56	2	_____
55027	DOOR BUSHING	each	M5-D	1	_____
73177	DOOR PIVOT PIN PROTECTOR	each		1	_____
76131	DOOR SWITCH ADJ. SLEEVE	each	M10-E	1	_____
SMH1501-N	TORSION SPRING	each		1	_____

12-Jun-03
8:07 AM

SUPERIOR MANUFACTURING

Pick List

14148 / DUMBELL ROLLER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
14148	PICKLIST FOR 14148 REV DATE: 06/11/03 SEE NOTES FOR 14148	each		1	_____
1001	ZERT 1/8" NPT	each	50	2	_____
1213	NYLOCK NUT LOW PRO 1"-12	each	52	2	_____
14113-01-S2	DOOR DOUBLER	each		2	_____
14123	DOOR ROLLER	each		1	_____
55022-A	DOOR SHAFT	each	M5-C	1	_____
55027-D	DUMBELL ROLLER SPACER F/ TAPERED ROLLER BEARING 5 1/2"UHT THRU 20" HT	each	M5-D	1	_____
55191	DUMBELL ROLLER BUSHING F/5 1/2 UHT TONG	each	M6-D	2	_____
55192	DUMBELL ROLLER SPACER	each	M6-D	2	_____

13-Jun-03
3:54 PM

SUPERIOR MANUFACTURING

Pick List

14041 / BRAKE BAND ASSY. F/ 14"

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
14041-S1	BRAKE BAND PART #1 F/14" TONG	each		2	_____
14041-S2	BRAKE BAND GUSSET PART #2 F/14" TONG	each	M1-D	8	_____
14041-S3	BRAKE BAND PIN	each	M1-D	4	_____
14041-S4	BRAKE BAND PART #4 WELDED TO PART #1	each	M1-D	2	_____
1663	1/4 X 2" BRAKE BAND MAT. x 25 FT ROLL PRICED PER FOOT	each	WALL17	2	_____

SUPERIOR MANUFACTURING

Pick List

14195 / A35 VALVE BANK ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
14195	PICKLIST FOR 14195 REV DATE: 07/01/03 SEE NOTES F/ 14195	each		1	_____
1101	HEX NUT 1/2"-13 GR8	each	51	1	_____
1103	LOCKWASHER 1/2" GR8	each	51	3	_____
14213	CONTROL VALVE ASSEMBLY MODIFIED VA35-WDA4 PICKLIST	each		1	_____
A35-MRV-1	RELIEF CARTRIDGE 391-1873-004	each	S11-A	1	_____
A35-V1526K-8	HANDLE A-35 8" 342-9100-002	each	S11-F	3	_____
VA35-AA440	INLET W/O RELIEF VALVE	each	S11-E	1	_____
VA35-DA4	WORK SECTION	each	S11-E	1	_____
VA35-MA4	WORK SECTION	each	S11-E	1	_____
VA35-SA4	WORK SECTION	each	S11-F	1	_____
VA35-TR55	OUTLET SECTION 348-9176-001	each	S11-F	1	_____
X2-40	HHCS 1/2"-13 X 4 1/4" GR8	each		2	_____
X2-45	HHCS 1/2"-13 X 4 1/4" GR8	each	58	1	_____

26-Jun-03
9:58 AM
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SUPERIOR MANUFACTURING

Pick List

45091 / SHIFT ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
0045091	PICKLIST F/SHIFT ASSY REV DATE: 10/14/02 SEE NOTES F/45091	each		1	_____
1025	FLATWASHER 3/8" GR8	each	50	2	_____
1027	LOCKWASHER 3/8" GR8	each	50	2	_____
1030	SET SCREW 3/8"-16 X 1"	each	50	1	_____
1046	HHCS 3/8"-16 X 3/4" GR8	each	50	2	_____
45072	SHIFTING YOKE WELDMENT	each	M4-B	1	_____
45092	FLANGE BEARING SELF-LUBR.	each	M4-C	1	_____
45106	FLANGE BEARING MOD.SPLIT SELF-LUBRICA.	each	M4-D	1	_____
45142	STRAIGHT YOKE HANDLE	each	M4-D	1	_____
45143	SHIFTER SHAFT	each	M4-D	1	_____
55071	BALL HANDLE #B6	each	S2-G	1	_____

6-Jun-03
2:25 PM

SUPERIOR MANUFACTURING

Pick List

55142 / ENCODER ASSEMBLY

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
55142	PICKLIST FOR ENCODER ASSY. REV DATE: 12/08/97 SEE NOTES F/55142	each		1	_____
1034	SET SCREW 1/4" #10-32	each	50	1	_____
1040-A	SHCS 3/8"-16 X 3/4"	each	50	1	_____
1101	HEX NUT 1/2"-13 GR8	each	51	1	_____
1276	SCREW, MACHINE 6-32 X 3/8" BRASS	each	54	4	_____
40034	COVER PLATE - SQUARE	each	M3-C	1	_____
51031	ENCODER COUPLING MOUNT	each	M4-E	1	_____
51075	ENCODER MOUNTING PLATE	each	M4-F	1	_____
55144	ENCODER COUPLING	each	M6-D	1	_____

13-Jun-03
4:01 PM

SUPERIOR MANUFACTURING

Pick List

SLV1000-01 / N.C. SELF LUBRICATED VALVE

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00SLV1000-01	PICKLIST FOR SLV1000-01 REV DATE: 08/19/02 SEE NOTES F/SLV1000-01	each		1	_____
1007	U BOLT 1/4"-20 X 1 "	each	M1-B	1	_____
1014	U BOLT 1/4" X 1 1/4"	each	M1-B	1	_____
2-016	O RING-5/8"ID 3/4"OD 1/16"WIDTH	each	O2-A	1	_____
40028	PROTECTOR SLEEVE F/ DOOR SWITCHES(SLV1000-01)	each	M3-B	1	_____
MA10-ACNC-04	2 WAY CAM OPERATED VALVE	each	S3-C	1	_____
SLV1002	N.C SPOOL F/ SLV1000-01	each	S3-C	1	_____
SLV1003	DOOR SWITCH VALVE ROLLER F/ SLV1000	each	S3-C	1	_____

13-Jun-03
4:02 PM

SUPERIOR MANUFACTURING

Pick List

SSCF1500 / 1 1/2 SEVERE SERVICE CAM FOLLOWER ASSY.

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1257	DRIVE ZERT 1/4"	each	53	1	_____
SSCF1501	FOLLOWER STUD 1 1/2 SEVERE SER. FOLLOWER	each	M19-D	1	_____
SSCF1502	1 1/2" SEVERE SERVICE CAM RACE F/CLE14000	each	M19-D	1	_____
SSCF1503	GARLOCK BUSHING FLANGED 16FDU12 1" ID X 3/4"	each	M19-D	1	_____

SUPERIOR MANUFACTURING

Pick List

KITBOLT-26.1 / BOLT KIT F/CLE14000-05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00KITBOLT-26.1	PICKLIST FOR KITBOLT-26.1 REV DATE: 07/08/03	each		1	_____
100	HEX NUT 1/4"-20 GR8	each	55	3	_____
1001	ZERT 1/8" NPT	each	50	45	_____
1002	ZERT 90 DEG. 1/8" NPT	each	50	2	_____
1025	FLATWASHER 3/8" GR8	each	50	4	_____
1027	LOCKWASHER 3/8" GR8	each	50	14	_____
1029	SET SCREW 3/8"-16 X 1/2"	each	50	16	_____
1030	SET SCREW 3/8"-16 X 1"	each	50	1	_____
1044	SHCS 3/8"-16 X 3"	each	50	12	_____
1046	HHCS 3/8"-16 X 3/4" GR8	each	50	2	_____
1047	HHCS 3/8"-16 X 1" GR8	each	50	2	_____
1048	HHCS 3/8"-16 X 1 1/4" GR8	each	50	10	_____
105	HHCS 1/4"-20 X 1" GR8	each	55	3	_____
1060	HHCS 3/8"-16 X 2 1/2" GR8	each	51	4	_____
1085	HHCS 7/16"-14 X 1 3/4" GR8	each	57	1	_____
110	HHCS 1/4"-20 X 2 1/4" GR8	each	57	4	_____
1101	HEX NUT 1/2"-13 GR8	each	51	6	_____
1103	LOCKWASHER 1/2" GR8	each	51	25	_____
1107	SHCS 1/2"-13 X 1 3/4"	each	51	1	_____
1110	HHCS 1/2"-13 X 1" GR8	each	51	3	_____
1111	HHCS 1/2"-13 X 1 1/4" GR8	each	51	15	_____
1117-A	HHCS 1/2"-13 X 9 1/2" GR8	each	51	5	_____
1151	LOCKWASHER 5/8" GR8	each	51	70	_____
1152	HI COLLAR LOCKWASHER 5/8	each	51	1	_____
1153	SHCS 5/8"-11 X 1"	each	56	6	_____
1156	HHCS 5/8"-11 X 1 1/4" GR8	each	55	15	_____
1158	HHCS 5/8"-11 X 1 3/4" GR8	each	55	26	_____

SUPERIOR MANUFACTURING

Pick List

KITBOLT-26.1 / BOLT KIT F/CLE14000-05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1160	HHCS 5/8"-11 X 2" GR8	each	55	3	_____
1178	JAM NUT 7/8"-14	each	52	38	_____
1213	NYLOCK NUT LOW PRO 1"-12	each	52	36	_____
1222	HEX NUT 1 1/2"-12 GR8 F/IDLER GEAR	each	52	9	_____
1223	LOCKWASHER 1 1/2"	each	52	9	_____
1224	LOCKWASHER 7/8" GR8 HEAVY SPLIT	each	52	38	_____
1252	COTTER PIN 3/16" X 1 1/2" SS	each	53	3	_____
1252B	COTTER PIN 1/8" X 1" SS	each	53	2	_____
1257	DRIVE ZERT 1/4"	each	53	38	_____
1276	SCREW, MACHINE 6-32 X 3/8" BRASS	each	54	4	_____
201	HHCS 5/8"-11 X 2 1/4" GR8	each	57	24	_____
202	HHCS 5/8"-11 X 2 1/2" GR8	each	57	2	_____
212	NYLOCK NUT 1/4"-20 GR8	each	56	4	_____
213	NYLOCK NUT 3/8"-16 GR8	each	56	4	_____
256	SHCS 5/8"-11 X 1 1/4"	each	56	1	_____
280	FLATWASHER 3/4"	each	55	1	_____
292	NYLOCK NUT 7/16"-14 GR8	each	56	1	_____
58063	SET SCREW 5/8"-11 X 1 1/4" SOCKET HD W/NYLOCK PATCH COARSE THREAD	each	M7-B	2	_____
X2-40	HHCS 1/2"-13 X 4 1/4" GR8	each	58	2	_____
X2-45	HHCS 1/2"-13 X 4 1/2" GR8	each	58	2	_____

SUPERIOR MANUFACTURING

Pick List

KITBRG-26 / BEARING KIT F/CLE14000-04 & 05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
00KITBRG26	PICKLIST FOR KITBRG-26 REV DATE: 06/12/03	each		1	_____
14053	GARLOCK BUSHING 18DU12 1 1/8" X 3/4"	each	S2-F	2	_____
14054	GARLOCK BUSHING 08DU12 1/2" ID X 3/4"	each	S2-F	2	_____
1900	BEARING 5308 MZZG	each	S5-D	1	_____
1901	BEARING 306 SZZ	each	S5-D	2	_____
1902	BEARING MRC5308MZZ	each	S5-D	2	_____
1903	BEARING 306 SZZC	each	S5-D	1	_____
1905	**CLINCHER®** IDLER BEARING X-tra Heavy Duty Sealed type MODIFIED MU5212TM BEARING	each	S5-D	9	_____
1909	FAF9105KDD BEARING	each	S5-D	2	_____
1926	SNAP RING INT. RR-433 SPIROL LOC	each	S5-E	10	_____
1946	SNAP RING EXT. 237	each	S5-F	1	_____
1948	SNAP RING INT. RRT-283	each	S5-F	1	_____
1949	SNAP RING INT. N5000-187	each	S5-F	1	_____
1950	SNAP RING EXT. N5100-100	each	S5-F	2	_____
1954-A	INNER RACE - NOLAN R-1916	each	S5-F	2	_____
2021	GARLOCK BUSHING 24DU16 1 1/2" ID X 1" DOOR BUSHING	each	S2-G	2	_____
45092	FLANGE BEARING SELF-LUBRI.	each	M4-C	1	_____

1-Jul-03
3:37 PM

SUPERIOR MANUFACTURING

Pick List

KITFIT-26.1A / FITTING KIT F/CLE14000-05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1441	QUICK DISC.1"MALE-WING TYPE	each	S3-G	1	_____
1446	QUICK DISCONNECT 1 1/4" M WING TYPE	each	S4-A	1	_____
1453-A	STREET EL 1"	each	S4-A	6	_____
1462	HEX NIPPLE 1"	each	S4-B	3	_____
1463	HEX NIPPLE 1 1/4"	each	S4-B	2	_____
1496	REDUCER BUSHING 1" X 1/2"	each	S4-C	3	_____
1499	REDUCER BUSHING 1 1/4" X 1"	each	S4-C	3	_____
1576	90 1/4"MNPT X 1/4"MJIC	each	S4-D	2	_____
1602	TEE 1 1/4" FNPT	each	S4-F	1	_____
1605	90 1 1/4" FNPT X FNPT	each	S4-F	1	_____
1625	90 1/2" FNPT X MJIC	each	S4-G	1	_____
1626	90 1/2" MNPT X MJIC	each	S4-G	1	_____

1-Jul-03
3:39 PM

SUPERIOR MANUFACTURING

Pick List

KITFIT-26.1C / FITTING KIT F/CLE14000-05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1460	HEX NIPPLE 1/2"	each	S4-B	1	_____
1591	90 1" FNPT X FNPT	each	S4-E	7	_____
1604	45 1" MNPT X 1" FNPT	each	S4-F	4	_____
1611	FLUSH PLUG 1" MNPT	each	S4-G	1	_____
1616	RUN TEE 1"	each	S4-G	1	_____
1658	1 1/4" STREET EL	each	S5-B	1	_____
1658-A	REDUCER BUSHING 1 1/4"X 1/4	each	S5-B	1	_____

SUPERIOR MANUFACTURING

Pick List

KITFIT-26.1A&F / FITTING KIT F/CLE14000-05

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1370	1" UNION 3000#	each	S3-C	3	_____
1403	PIPE NIPPLE 1/2" X 7 1/4" SCH.80	each	S3-E	1	_____
1414	PIPE NIPPLE 1 1/4" X 4" SCH.80	each	S3-F	1	_____
1418	PIPE NIPPLE 1" X 3" SCH.80	each	S3-F	1	_____
1419	PIPE NIPPLE 1" X 6" SCH.80	each	S3-F	3	_____
1420	PIPE NIPPLE 1" X 4" SCH.80	each	S3-F	1	_____
1421	PIPE NIPPLE 1" X 10" SCH.80	each	S3-F	1	_____
1421-B	1" X 7 1/2" PIPE NIPPLE	each		2	_____
1425	PIPE NIPPLE 1" X 8" SCH.80	each	S3-F	1	_____
1436-A	PIPE NIPPLE 1" X 5 1/2"	each	S3-G	1	_____
1514	1 1/4" 3000# UNION	each	S4-C	1	_____
1674	1 1/4" X 3 1/2" PIPE NIPPLE	each		1	_____
1685	1 1/4" X 13" PIPE NIPPLE	each		1	_____

SUPERIOR MANUFACTURING

Pick List

CJ-LF-14A / 7 5/8" - 4 1/2" LF JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1041	SHCS 3/8"-16 X 1"	each	50	8	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
1231	SHCS 5/8"-11 X 5 1/2"	each	53	8	_____
14028BL	BOT. LEFT JAW PL 7 5/8-4 1/2 F/14" CASING TONG	each		1	_____
14028TL	TOP LEFT JAW PL 7 5/8-4 1/2 F/14" CASING TONG	each		1	_____
14029BR	BOT. RT. JAW PL. 7 5/8-4 1/2 F/14" CASING TONG	each		1	_____
14029TR	TOP RT. JAW PL. 7 5/8-4 1/2 F/14" CASING TONG	each		1	_____
14030	TONG JAW INSERT F/ TONG JAW 7 5/8-2 3/8 14" CASING TONG	each		2	_____
14031	JAW ROLLER OBSOLETE REPLACE BY 14031-02	each	M1-D	2	_____
14063	JAW ROLLER PIN F/10 3/4" JAW 14" TONG	each	M1-E	2	_____
22DU24	GARLOCK BUSHING 22DU24 1 3/8" ID X 1 1/2"	each	S2-G	6	_____
72033	DOOR RET.CLIPS	each	M8-B	4	_____

9-Jun-03
8:00 AM

SUPERIOR MANUFACTURING

Pick List

CJ-LF-14B / 10 3/4" - 7 5/8" LF JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1040-A	SHCS 3/8"-16 X 3/4"	each	50	8	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14023	TONG JAW F/CJ-LF-14B ASSY 7-5/8" thru 10-3/4" F/14" CASING TONG	each		2	_____
14062	LOW FRICTION JAW ROLLER F/10 3/4" JAW 14" TONG	each	M1-E	2	_____
14063	JAW ROLLER PIN F/10 3/4" JAW 14" TONG	each	M1-E	2	_____
22DU24	GARLOCK BUSHING 22DU24 1 3/8" ID X 1 1/2"	each	S2-G	6	_____
BUCS10707	DIE CLIP	each	M13-D	4	_____

9-Jun-03
8:01 AM

SUPERIOR MANUFACTURING

Pick List

CJ-LF-14C / 11 3/4" - 7 5/8" LF SP JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1041	SHCS 3/8"-16 X 1"	each	50	8	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14025	11 3/4-8 5/8 TONG JAWS	each		2	_____
14062	LOW FRICTION JAW ROLLER F/10 3/4" JAW 14" TONG	each	M1-E	2	_____
14063	JAW ROLLER PIN F/10 3/4" JAW 14" TONG	each	M1-E	2	_____
22DU24	GARLOCK BUSHING 22DU24 1 3/8" ID X 1 1/2"	each	S2-G	6	_____
CLEBU1121	DIE ADAPTOR RETAINER CLIP F/ 11 3/4 BUCKING UNIT	each	M16-B	4	_____

27-Jun-03
7:31 AM

SUPERIOR MANUFACTURING

Pick List

CJDT14H07000 / 7" DOVETAIL JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1027	LOCKWASHER 3/8" GR8	each	50	4	_____
1061	BUTTON HD CS 3/8"-16 X 3/4"	each	51	4	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14059-01	1 1/2" I.D. JAW ROLLER F/14" H.T. CASING JAW	each		2	_____
14127L-01	7" LEFT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
14127R-01	7" RIGHT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
76013-01	1 1/2" O.D. JAW PIN FOR HIGH TORQUE JAW	each		2	_____
DTI1602	DOVETAIL STRIP DIE 0.500" T 1 1/4" W X 1/2" T X 5" L STRAIGHT TOOTH	each	MISC,BIN-B	4	_____

27-Jun-03
7:32 AM

SUPERIOR MANUFACTURING

Pick List

CJDT14H09625 / 9 5/8" DOVETAIL JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1027	LOCKWASHER 3/8" GR8	each	50	4	_____
1061	BUTTON HD CS 3/8"-16 X 3/4"	each	51	4	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14059-01	1 1/2" I.D. JAW ROLLER F/14" HIGH TORQUE CASING JAW	each		2	_____
14125L-01	9 5/8" LEFT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
14125R-01	9 5/8" RIGHT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
76013-01	1 1/2" O.D. JAW PIN FOR HIGH TORQUE JAW	each		2	_____
DTI1602	DOVETAIL STRIP DIE 0.500" T 1 1/4" W X 1/2" T X 5" L STRAIGHT TOOTH	each	MISC,BIN-B	4	_____

27-Jun-03
7:33 AM

SUPERIOR MANUFACTURING

Pick List

CJDT14H10750 / 10 3/4" DOVETAIL JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1027	LOCKWASHER 3/8" GR8	each	50	4	_____
1061	BUTTON HD CS 3/8"-16 X 3/4"	each	51	4	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14059-01	1 1/2" I.D. JAW ROLLER F/14" H.T. CASING JAW	each		2	_____
14124L-01	7" LEFT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
14124R-01	7" RIGHT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
76013-01	1 1/2" O.D. JAW PIN FOR HIGH TORQUE JAW	each		2	_____
DTI1602	DOVETAIL STRIP DIE 0.500" T 1 1/4" W X 1/2" T X 5" L STRAIGHT TOOTH	each	MISC,BIN-B	4	_____

27-Jun-03
7:34 AM

SUPERIOR MANUFACTURING

Pick List

CJDT14H13375 / 13 3/8" DOVETAIL JAW SET

Quantity to build: 1

Part Number	Description	U/M	Bin/ Location	Quantity to Pull	Quantity Pulled
1027	LOCKWASHER 3/8" GR8	each	50	4	_____
1061	BUTTON HD CS 3/8"-16 X 3/4"	each	51	4	_____
1071	HHCS 3/8"-16 X 3 1/2" GR8	each	51	2	_____
14059-01	1 1/2" I.D. JAW ROLLER F/14" H.T. CASING JAW	each		2	_____
14077L-01	7" LEFT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
14077R-01	7" RIGHT JAW WELDMENT F/14" H.T. CASING TONG	each		1	_____
76013-01	1 1/2" O.D. JAW PIN FOR HIGH TORQUE JAW	each		2	_____
DTI1602	DOVETAIL STRIP DIE 0.500" T 1 1/4" W X 1/2" T X 5" L STRAIGHT TOOTH	each	MISC,BIN-B	4	_____

ACCESSORIES AND OPTIONS

Several different accessory items are available for the **CLINCHER®** Tong to allow them to be customized to provide a system most appropriate for the inducer's application.

CLE14000 Tong Accessories

Compression Load Cell and Torque Gauge	directly measures applied torque
Tension Load Cell and Torque Gauge	directly measures applied torque
Solenoid Operated Module for Dump Valve	allows computer to limit torque applied
Adapter for Turns Proximity Switch	allows computer to sense rotation
3 Point Lifting Bridle	alternative lifting system
Bail System Assembly	alternative lifting system
Lift Cylinder with Integral Spring Hanger	controls vertical position
TSP-80 Tong Speed Control	allows slow speed rotation with full torque
2 Speed Motors	
Alternate Motor Displacements	
Hydraulically Operated Cage Plate Brake System	

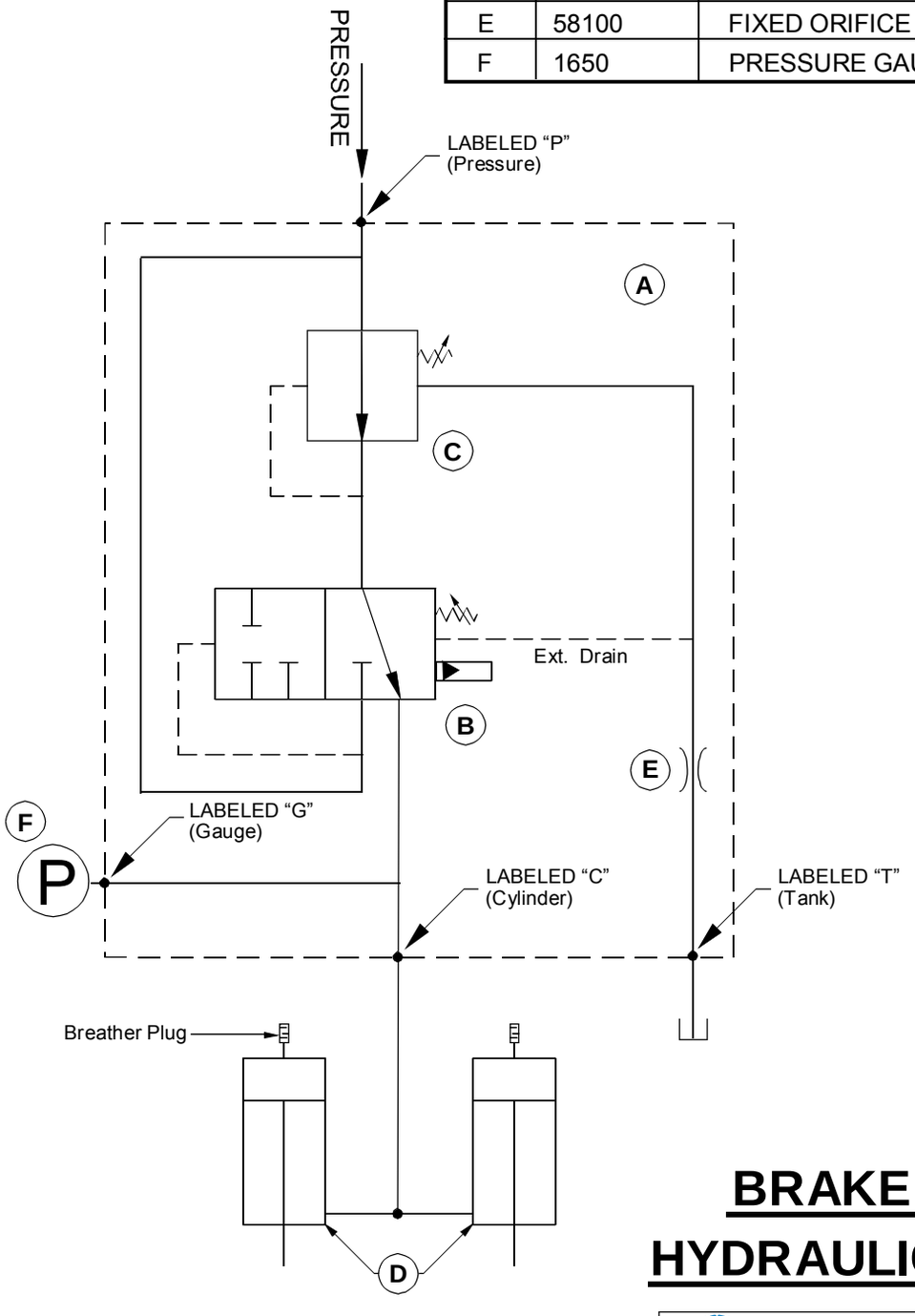
ACCESSORIES AND OPTIONS

Hydraulically Operated Cage Plate Brake System

This system replaces the springs used to energize the cage plate brake band. When the tong motor is activated, hydraulic pressure is directed through a pressure reducing valve (ref Item C, Dwg. ILL1080) which is in the custom manifold (ref Item A) set at 250 to 300 psi. This low pressure fluid is then directed through a directional control valve system (ref Item B) which is in the custom manifold (ref Item A) and on to a pair of hydraulic cylinders (ref Item D) connected to the brake band. This pressure creates the brake band resistance required to cause the relative rotation between the cage plate assembly and the ring gear required to activate the jaws. At high torques when the motor pressure exceeds approximately 2000 psi the directional control valve shifts to shut off hydraulic fluid into the brake cylinder. Pressure contained within the cylinders is allowed to bleed off through a fixed orifice (ref Item E) to a level equivalent to system back pressure. Relieving this pressure reduces brake friction at a time when it is not required because the jaws have already been actuated, thus increasing overall tong efficiency.

If brake performance appears to be less than required, pressure can be increased by adjusting the regulator stem on the pressure reducing valve (ref Item C) which is in the custom manifold (ref Item A). We do not recommend that brake system pressure be allowed to exceed 500 psi as shown on pressure gauge (ref Item F) attached to the directional control valve.

ITEM	PART NO.	DESCRIPTION
A	58090	CUSTOM MANIFOLD, C-22102
B	58090-S1	CARTRIDGE, DPBMLBN
C	58090-S2	CARTRIDGE, 1PA10-F3-10SV
D	72032	BRAKE CYLINDERS (2 required)
E	58100	FIXED ORIFICE
F	1650	PRESSURE GAUGE (0-3000 PSI)



BRAKE CYLINDER HYDRAULIC SCHEMATIC

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
BROUSSARD, LA 70518
(318) 837-8847

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REV. #	LOG #	DATE
3		10/07/02

REF: S:\Equip Manuals\Dwgs\ILL1080 rev3.wpg

ACCESSORIES AND OPTIONS

PRODUCT BULLETIN

SUBJECT: CONTROL SYSTEM - HYDRAULICALLY ACTUATED BRAKE SYSTEM

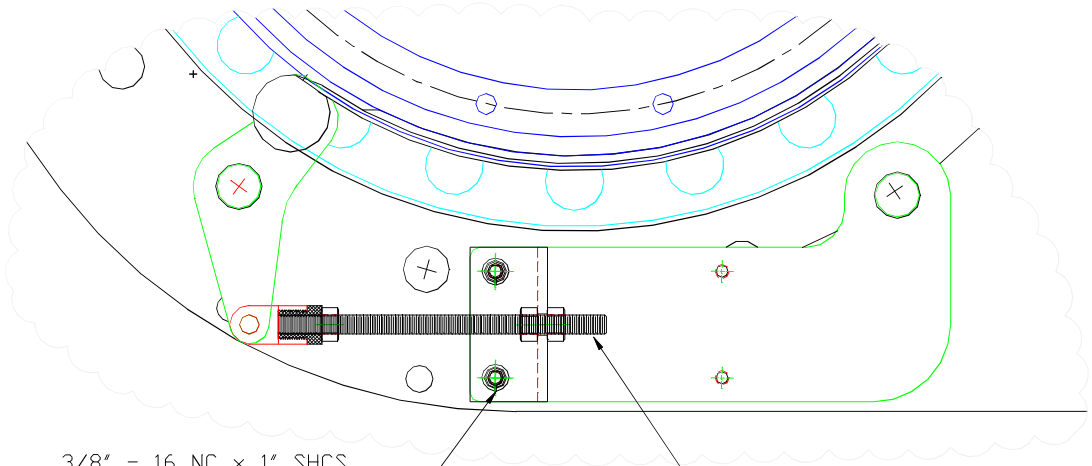
DATE: July 03, 2000

BULLETIN NO.: SPB00-07-03

REFERENCE: CLE14000 Page 8 - 2 / Hydraulically Operated Cage Plate Brake System

This tong features a hydraulically actuated brake system to insure effective operation under adverse conditions and optimum efficiency when operating at high torques. Pressure used to operate the tong brake cylinders comes directly from the supply manifold. This pressure is regulated to a maximum of 450 psi by means of a pressure reducing valve. A second shuttle valve located between the motor ports supplies pilot pressure to the brake pressure control valve to shut off pressure to the tong brake cylinders whenever motor pressure exceeds 2000 psi to increase tong efficiency. After shutting off flow to the brake cylinders, brake pressure is allowed to dissipate through an orifice. Brake pressure and operation may be observed by the brake pressure gage. Note in systems with high back pressure on the return circuit, it may be necessary to increase the brake operating pressure. Return circuit back pressure can be measured using the pressure gage located on the return manifold (not shown in schematic). If the tong fails to cam properly, brake pressure can be increased by loosening the lock nut on the stem of the brake pressure reducing valve and rotating the stem clockwise (inward) using a hex key allen wrench until good brake performance and camming action is observed. Revised brake operating pressure required can be calculated using the following equation:

Brake Operating Pressure (p) in psi = 370 + (Brake Back Pressure (bp) in psi ÷ 1.8)
This equation is suitable for use with brake cylinders with 1 ½" pistons and 1" rods.



3/8" - 16 NC x 1" SHCS
P/N 1041 with
3/8" high collar lock washer
P/N 1026
4 pcs each reqd per tong

1/2" - 13 NC x 8 1/2" long all thread rod

TOP TONG PLATE
P/N:14002

BRAKE CYL.DUMBELL SHAFT
P/N:14057
(TYP.)

BOTTOM TONG PLATE
P/N:14001

CYL.BRACKET RET.SLEEVE
P/N:72017

CYL.BRACKET REAR SHAFT SPACER
P/N:14058

1/2"- 13 NC nut Grade 8
P/N 165 - 6 pcs reqd per tong

reducing bushing

BRAKE ARM
P/N:14056
W/
18DU12 BUSHING
&
08DU12 BUSHING

CLEVIS RC-0605
MODIFIED FOR 3/4-16 NF THREAD
P/N:2008

3/16 COTTER PIN

Note Brake Arm and Clevis shown in rotated position in sectional view for clarity.

SECTION VIEW

Rev.#	By	Log#	Description of Revision
3			
2			
1			

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

2 PLACE DEC.	3 PLACE DEC.	FRACTIONS	ANGLES	SURFACE	FLATNESS AR PL.
±.020	±.005	± 1/16	± .5°	250	± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

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1 or 1 = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 1

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: alternate manual brake actuator FOR 14" TONG

PART #:

DRAWN BY: DSB

APPROVED BY: DAVID B

CHK BY: DATE: 07/03/00

REF: F:\MANUALS\BRAKE_CYLINDER

MATERIAL SPECIFICATION

Matl.Req:

Initial Condition:

H.T Instructions:

Case Depth:

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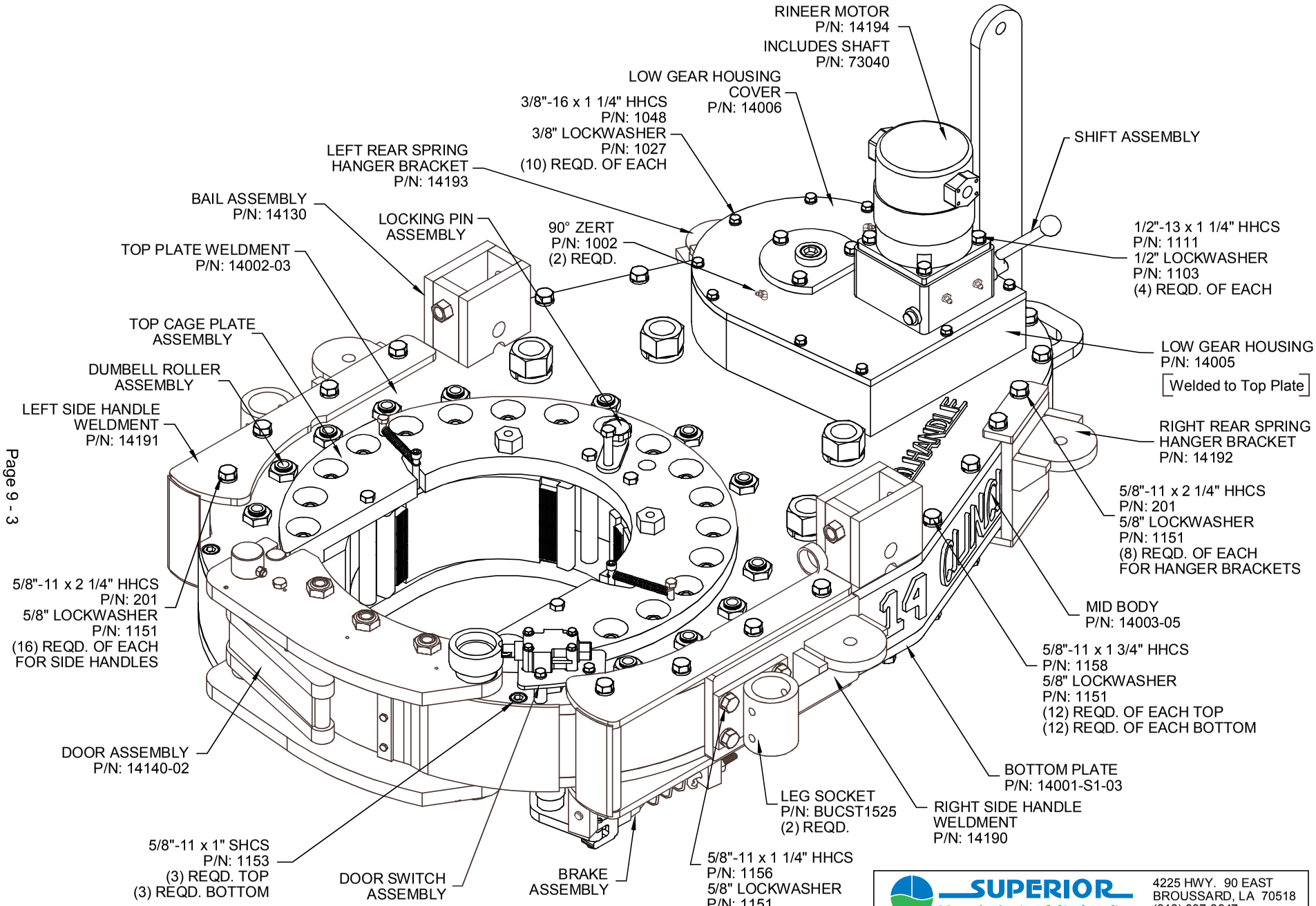

14" CLINCHER® TONG

SUPERIOR Manufacturing & Hydraulics
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BROUSSARD, LA 70518
(318) 837-8847

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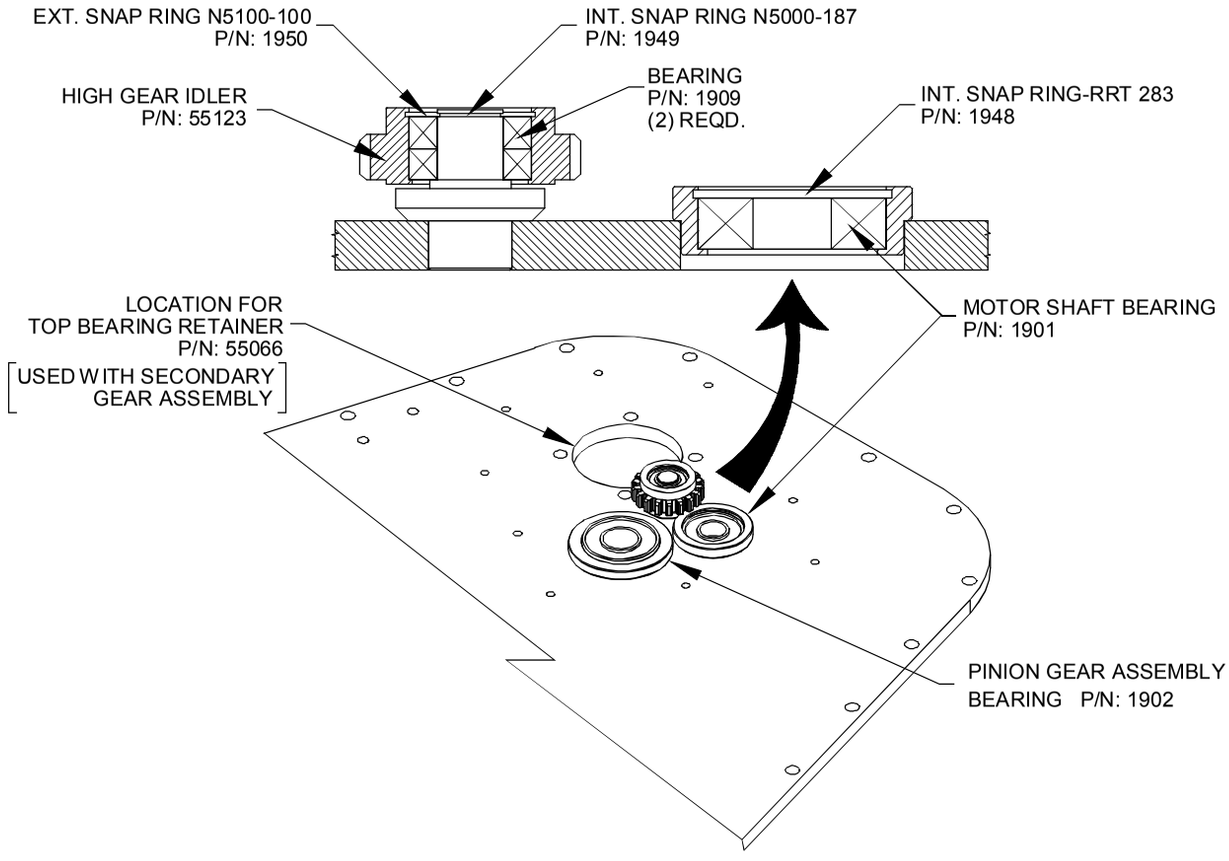
REV. #	LOG #	DATE
1		02/09/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000-05\Assembly rev1.wpg



14" TONG TOP PLATE ASSEMBLY

SHOWN WITHOUT LOW GEAR HOUSING

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BROUSSARD, LA 70518
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		01/10/00
REV. #	LOG #	DATE

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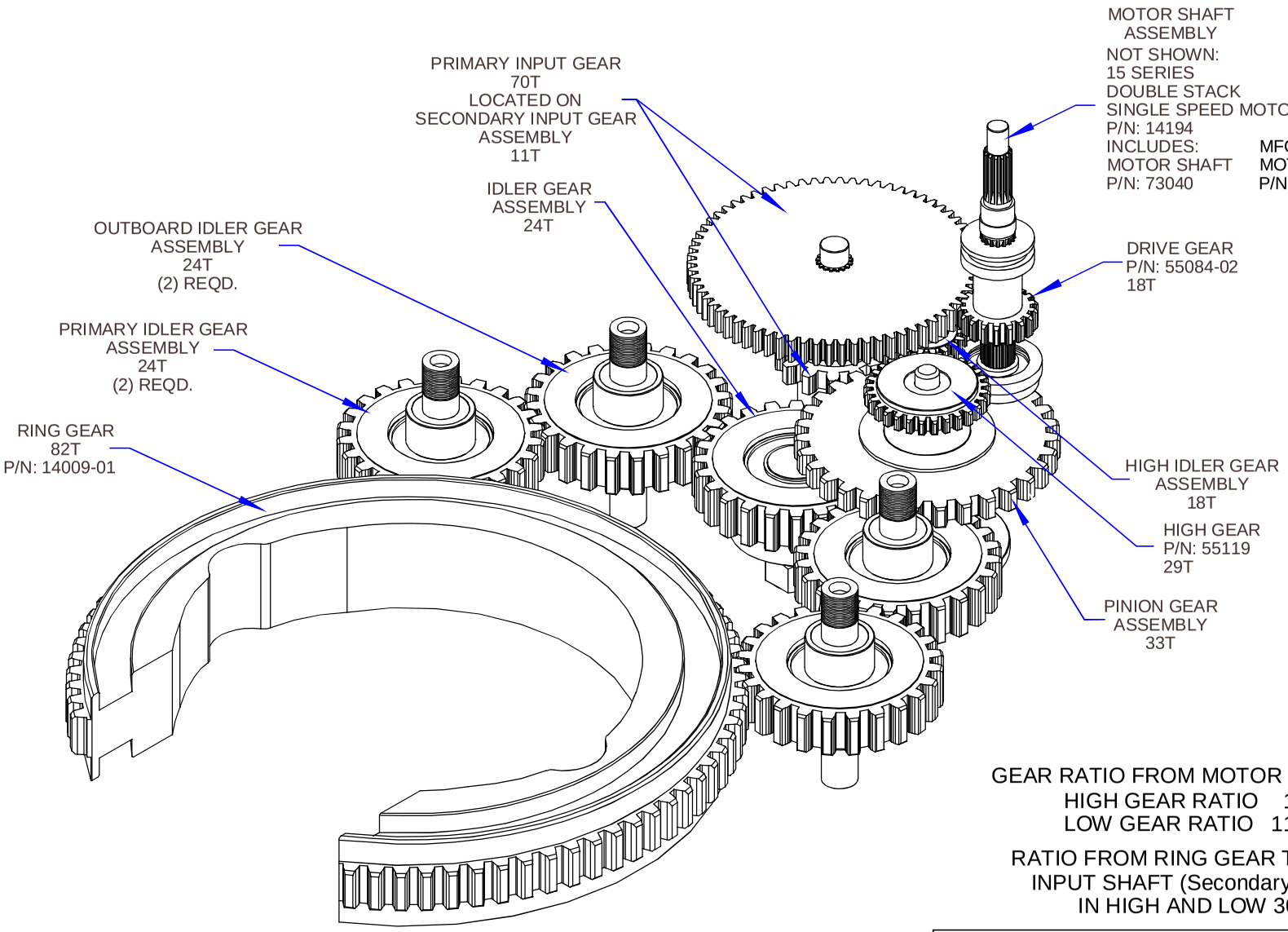

GEAR RATIO FROM MOTOR TO RING GEAR
HIGH GEAR RATIO 16.514:1
LOW GEAR RATIO 119.598:1

RATIO FROM RING GEAR TO ENCODER
INPUT SHAFT (Secondary Input Gear)
IN HIGH AND LOW 30.753:1

14" TONG GEAR TRAIN

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
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REV. #	LOG #	DATE
1		12/08/04

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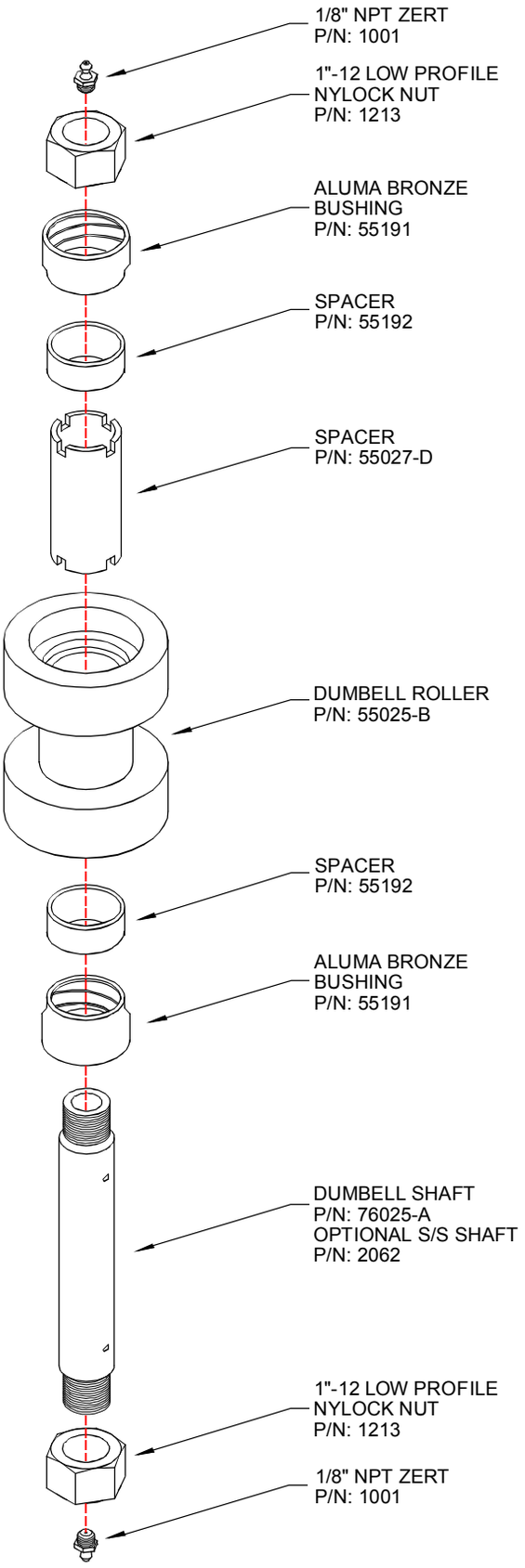

DUMBELL ROLLER ASSEMBLY

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BROUSSARD, LA 70518
(318) 837-8847

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		11/07/01
REV. #	LOG #	DATE

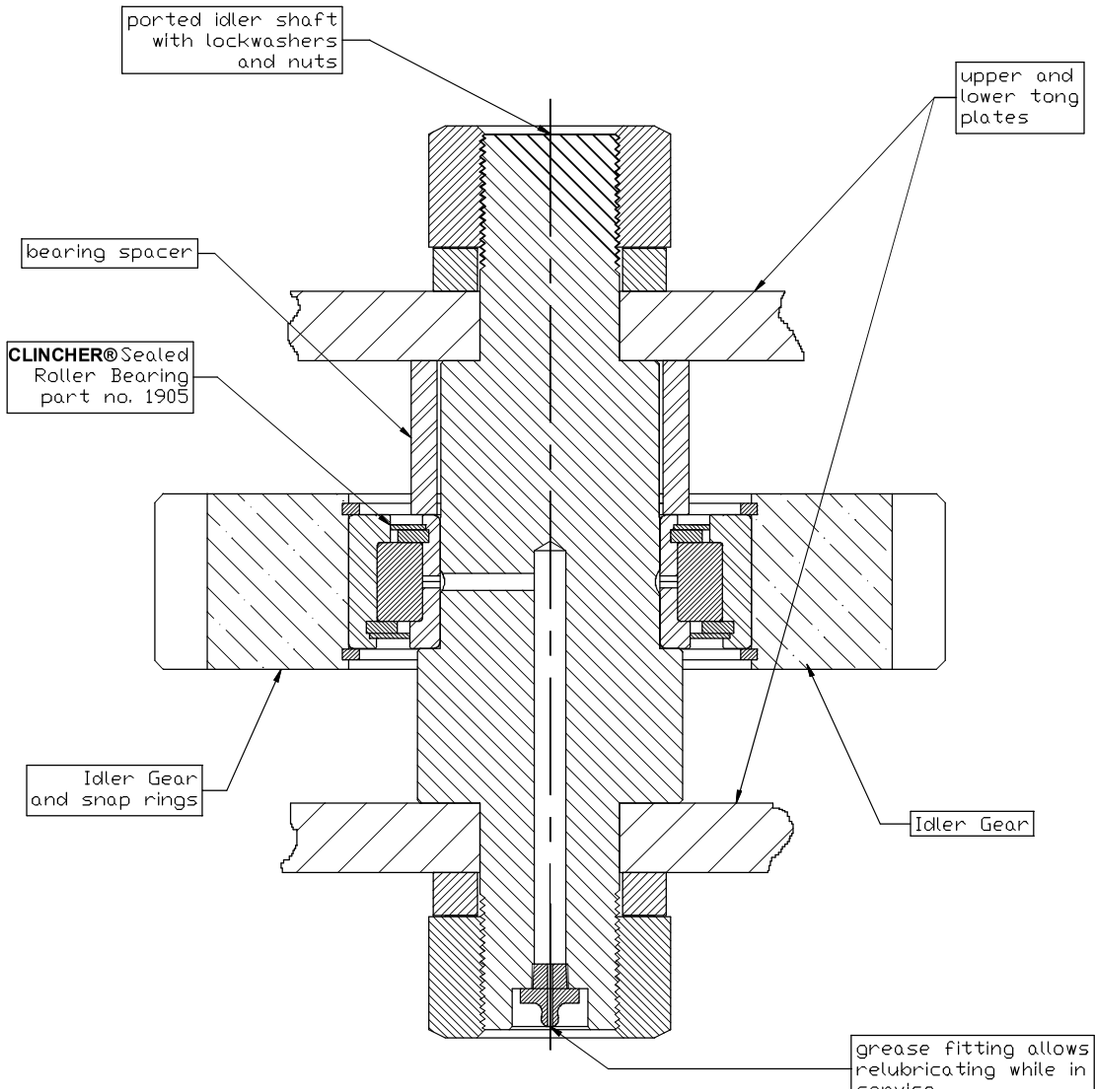
REF: S:\Equip Manuals-Dwgs\CLE5500\Dumbell Roller 4th.wpg

Features and Benefits:
Proprietary sealed bearing with full compliment roller design offers greater load ratings than commercially available sealed ball bearings. The ported inner race allows the bearing to be relubricated without disassembly. Integral elastomeric seals allow grease to be displaced but prevent migration of contaiminants into bearing.

Elastomeric seals are corrosion resistant and suitable for use in environments which are incompatible with traditional aluminum bearing shrouds.

Unique geometric design allows rollers to absorb thrust loads to maximize component life.

Nominal OD: 4.3307 inches
Nominal ID: 2.3622 inches
Nominal Ht: 1.4375 inches
static rating: 37540 lbs
dynaminc rating: 29230 lbs
(1mm cycles, 33 1/3 RPM f/ 500 hrs.)


ported idler shaft with lockwashers and nuts
upper and lower tong plates
bearing spacer
CLINCHER® Sealed Roller Bearing part no. 1905
Idler Gear and snap rings
Idler Gear
grease fitting allows relubricating while in service

SECTION VIEW of typical application

3			
2			
1	DB	12/07/02	added desc of thrust load capability
Rev.#	By	Log#	Description of Revision

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UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R3

2 PLACE DEC. ±.020	3 PLACE DEC. ±.005	FRACTIONS ± 1/16	ANGLES ± .5°	SURFACE 250	FLATNESS AR PL. ± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

△1 or ⬡1 = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 1 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: SEALED IDLER BEARING

PART #: 1905

DRAWN BY:

APPROVED BY:

CHK BY: DATE:

REF: ILL1000/ILL1142.DWG

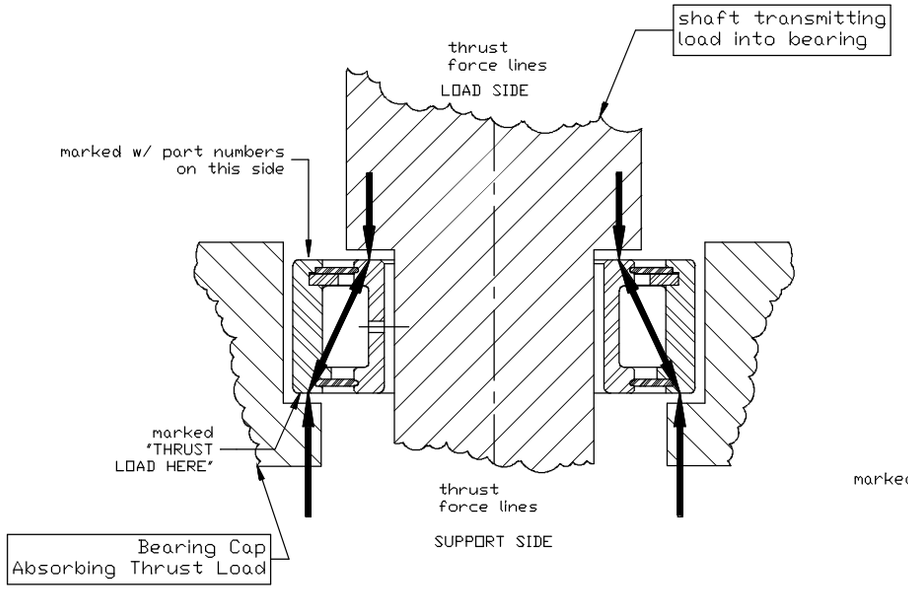
MATERIAL SPECIFICATION

Matl.Req:

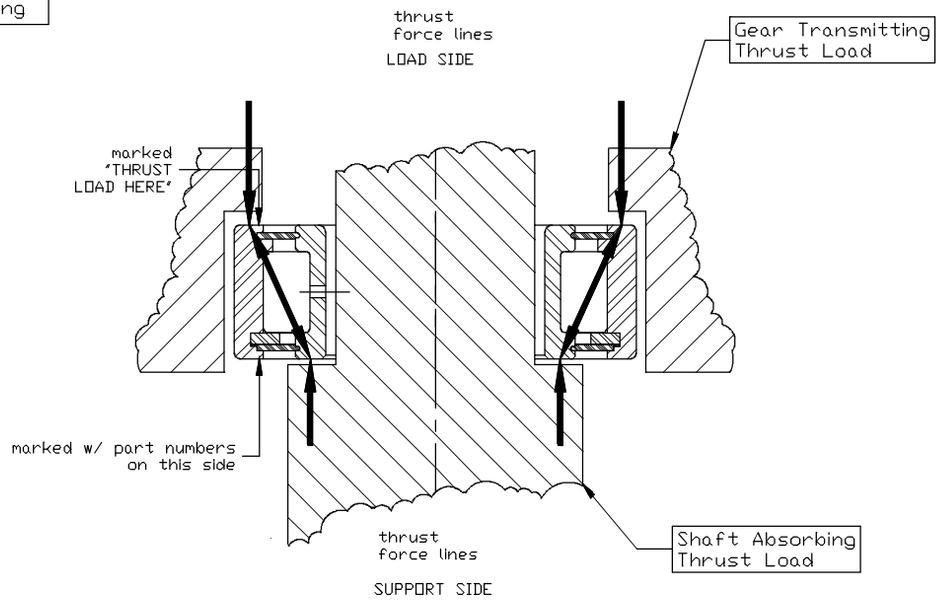
Initial Condition:

Alternative Matl:

H.T Instructions: Case Depth: C.D



Bottom Bearing Cap Application



Gear Support Application

Installation instructions for **CLINCHER®** BEARING Part Number 1905

Rev.#	By	Log#	Description of Revision
3			
2			
1	DB	12/07/02	added desc of thrust load capability

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UNLESS OTHERWISE SPECIFIED TOLERANCES ARE — R3

2 PLACE DEC. ±.020	3 PLACE DEC. ±.005	FRACTIONS ± 1/16	ANGLES ± .5°	SURFACE 250	FLATNESS AR PL. ± .015 per foot

1. Dimensions are in inches
2. Remove burrs & sharp edges with 1/64x45°max.
3. Machined fillet radii are 1/32
4. Normality,Squareness & parallelism of machine surfaces are .002 per inch, to a max of .012 inches for a single surface.
5. Machine diameters on a common centerline must be concentric within .005 T.I.R & unmachined diameters concentric within .032 T.I.R

1 or (1) = Revision Number

1.000 = Critical Dimension 100% Inspection Required

SHEET 2 of 2

SUPERIOR Manufacturing & Hydraulics
4225 HWY.90 E
BROUSSARD,LA 70518
(318)837-8847

PART NAME: Installation instructions for P/N 1905 SEALED IDLER BEARING

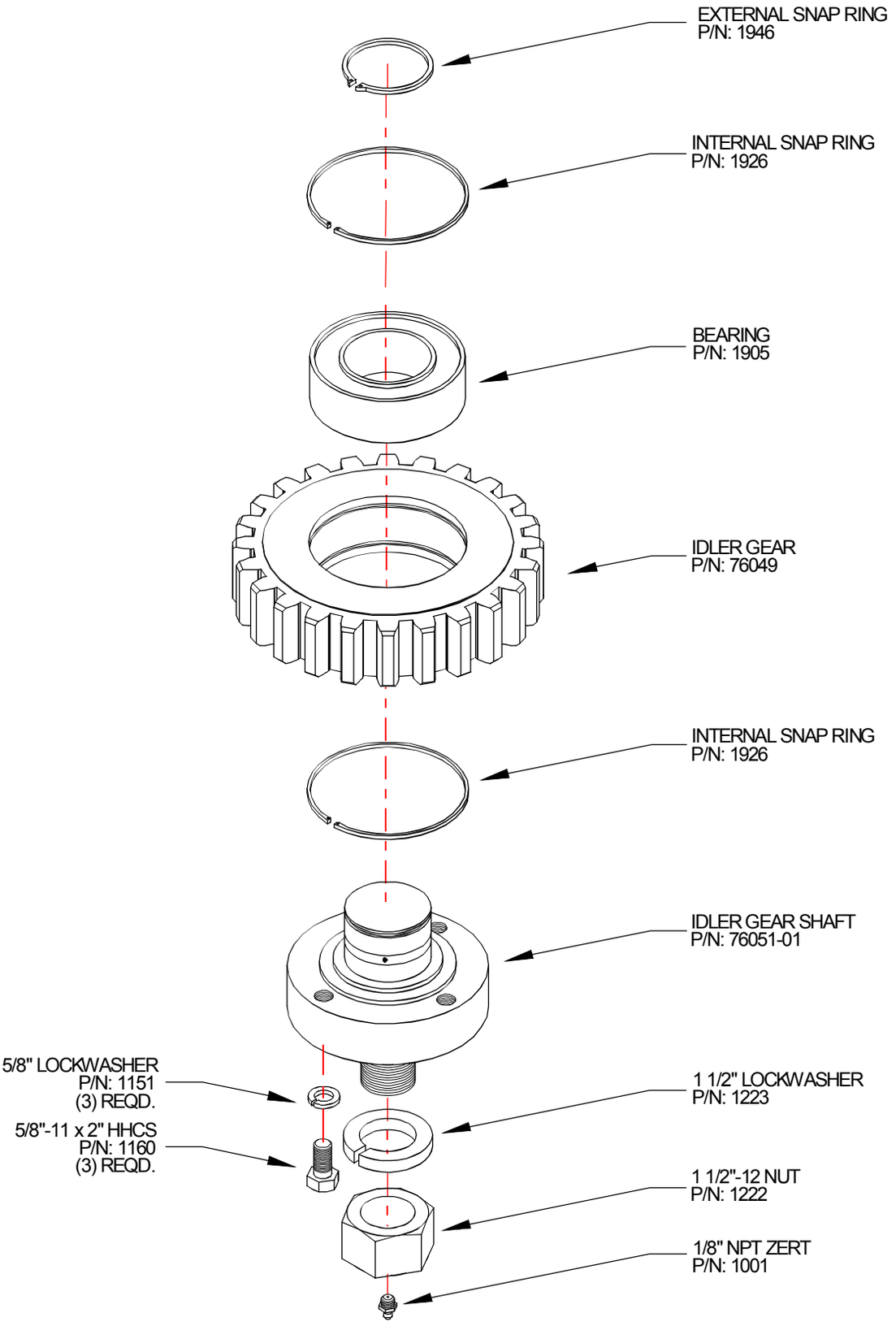
PART #: 1905 | MATERIAL SPECIFICATION

DRAWN BY: | Matl.Req:

APPROVED BY: | Initial Condition:

CHK BY: DATE: | Alternative Matl:

REF: REF ILL1000/ILL1142.DWG | H.T Instructions: Case Depth: C.D



IDLER GEAR ASSEMBLY

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BROUSSARD, LA 70518
(318) 837-8847

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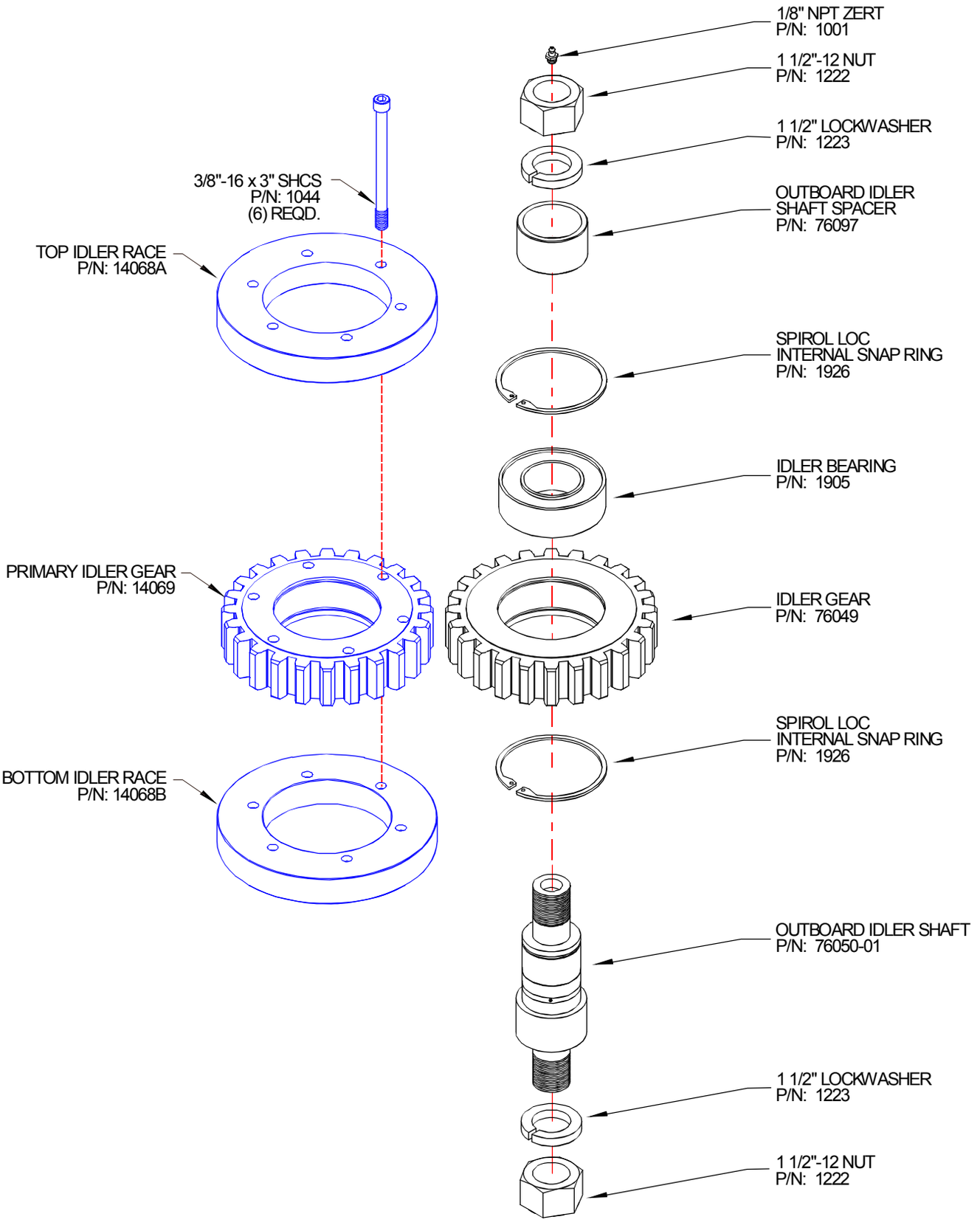
REV. #	LOG #	DATE
		07/01/03

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Idler Gear.wpg



OUTBOARD IDLER GEAR ASSEMBLY

SUPERIOR Manufacturing & Hydraulics
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BROUSSARD, LA 70518
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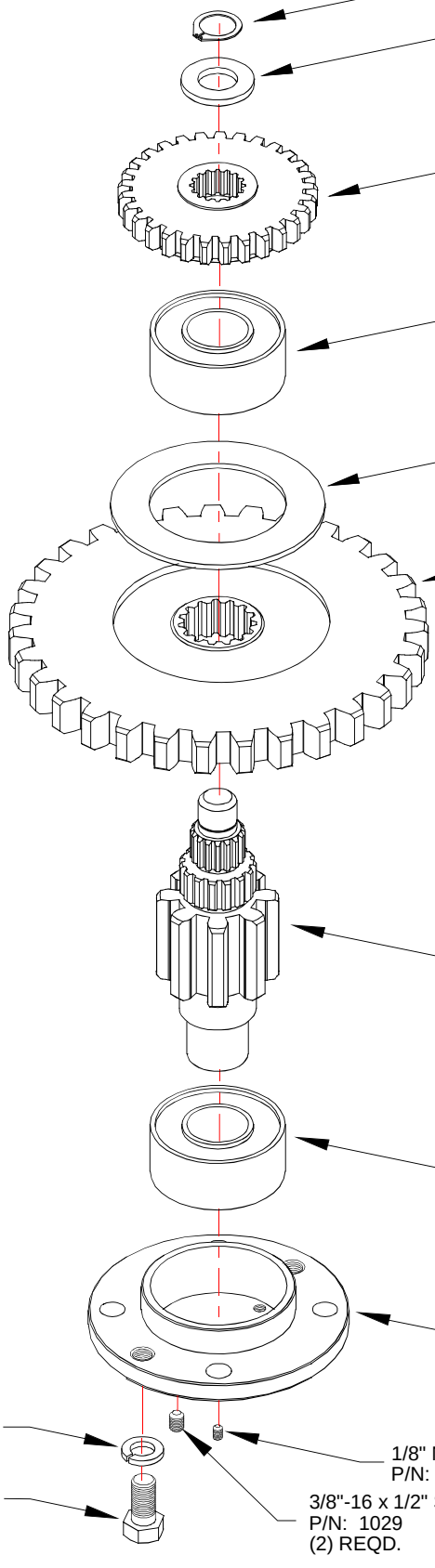
REV. #	LOG #	DATE
		07/01/03

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Outboard Idler.wpg



Note: Newer tongs utilize different pinion and low pinion gears. These gears are *NOT* interchangeable and must be used in sets.

	STANDARD OLD P/N	***ALTERNATE OLD P/N***	***NEW P/N***
Pinion Gear	55038-01	55038-01	73038
Low Pinion Gear	55047	55047BJ	55161BJ
Pinion Bearing Bushing	55047-1	55047-1	14049
Secondary Input Gear	55048	55048BJ	55048BJ

WARNING: DO NOT REPLACE FLUSH PLUG WITH GREASE ZERT.
BEARING IS A SEALED BEARING.

PINION GEAR ASSEMBLY

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REV. #	LOG #	DATE
1		05/03/04

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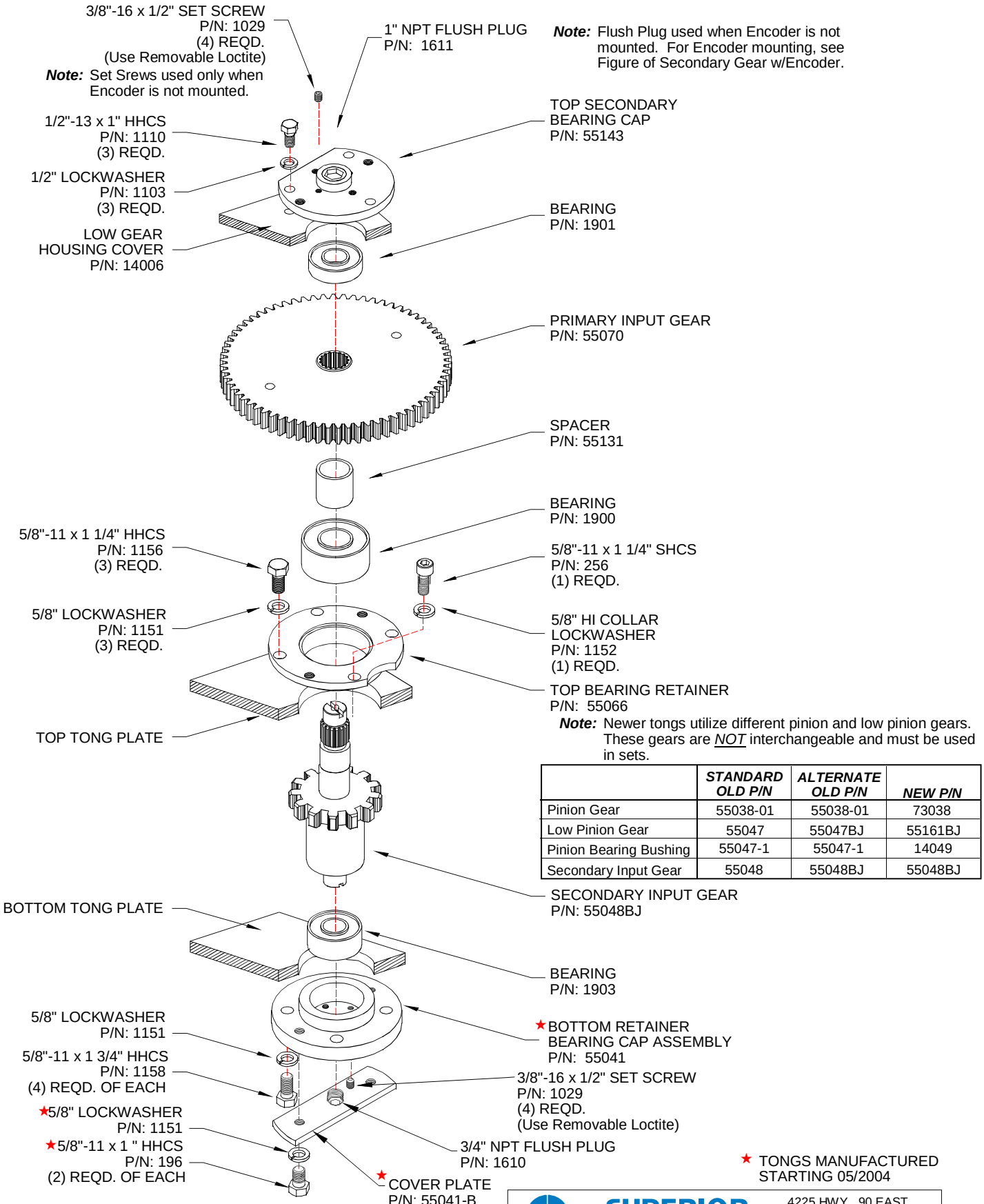

	STANDARD OLD P/N	ALTERNATE OLD P/N	NEW P/N
Pinion Gear	55038-01	55038-01	73038
Low Pinion Gear	55047	55047BJ	55161BJ
Pinion Bearing Bushing	55047-1	55047-1	14049
Secondary Input Gear	55048	55048BJ	55048BJ

Note: Newer tongs utilize different pinion and low pinion gears. These gears are *NOT* interchangeable and must be used in sets.

★ TONGS MANUFACTURED STARTING 05/2004

SECONDARY GEAR ASSEMBLY

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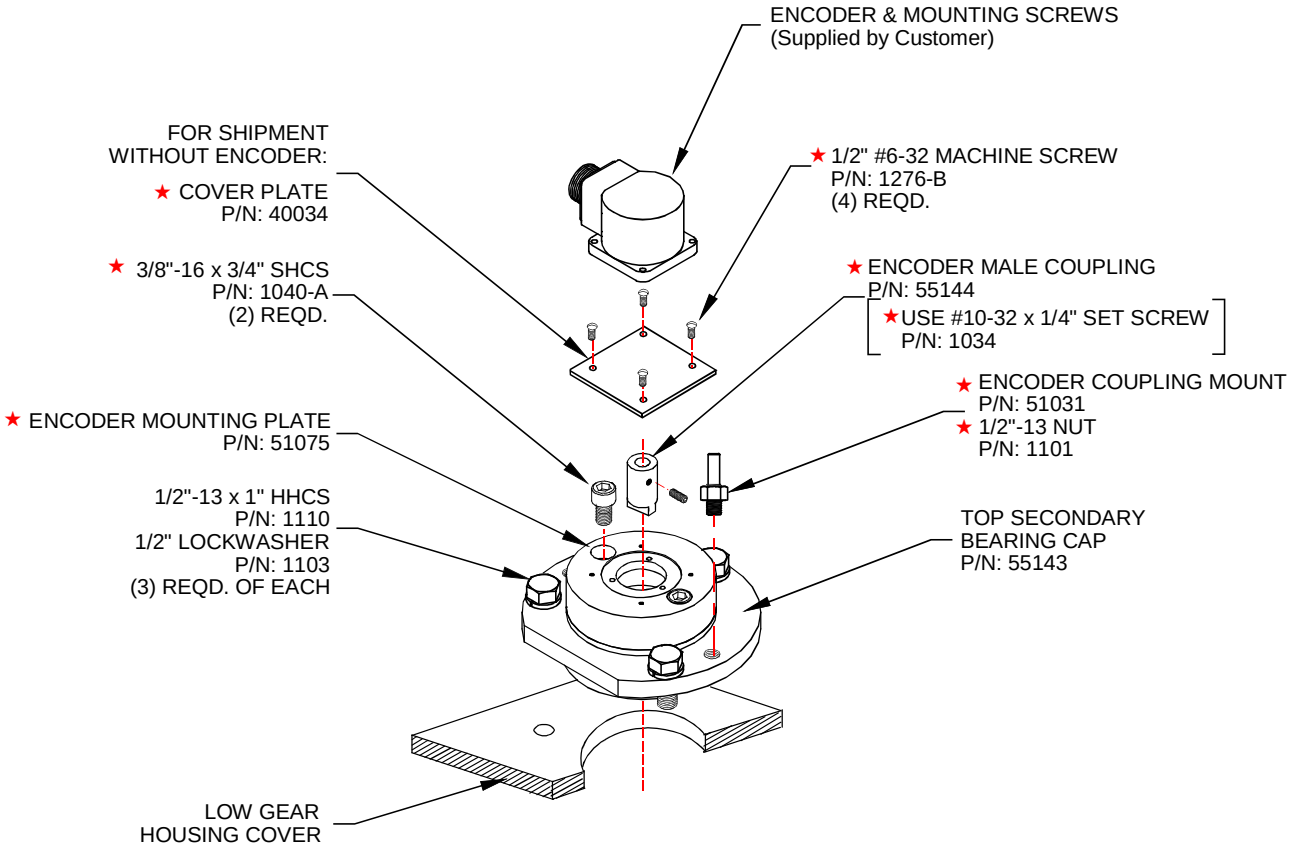
REV. #	LOG #	DATE
2		06/17/05

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Secondary Gear rev2.wpg



ENCODER ASSEMBLY

ENCODER ASSEMBLY NO. 55142 ★

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3		10/31/05
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE5500\Encoder rev3.wpg

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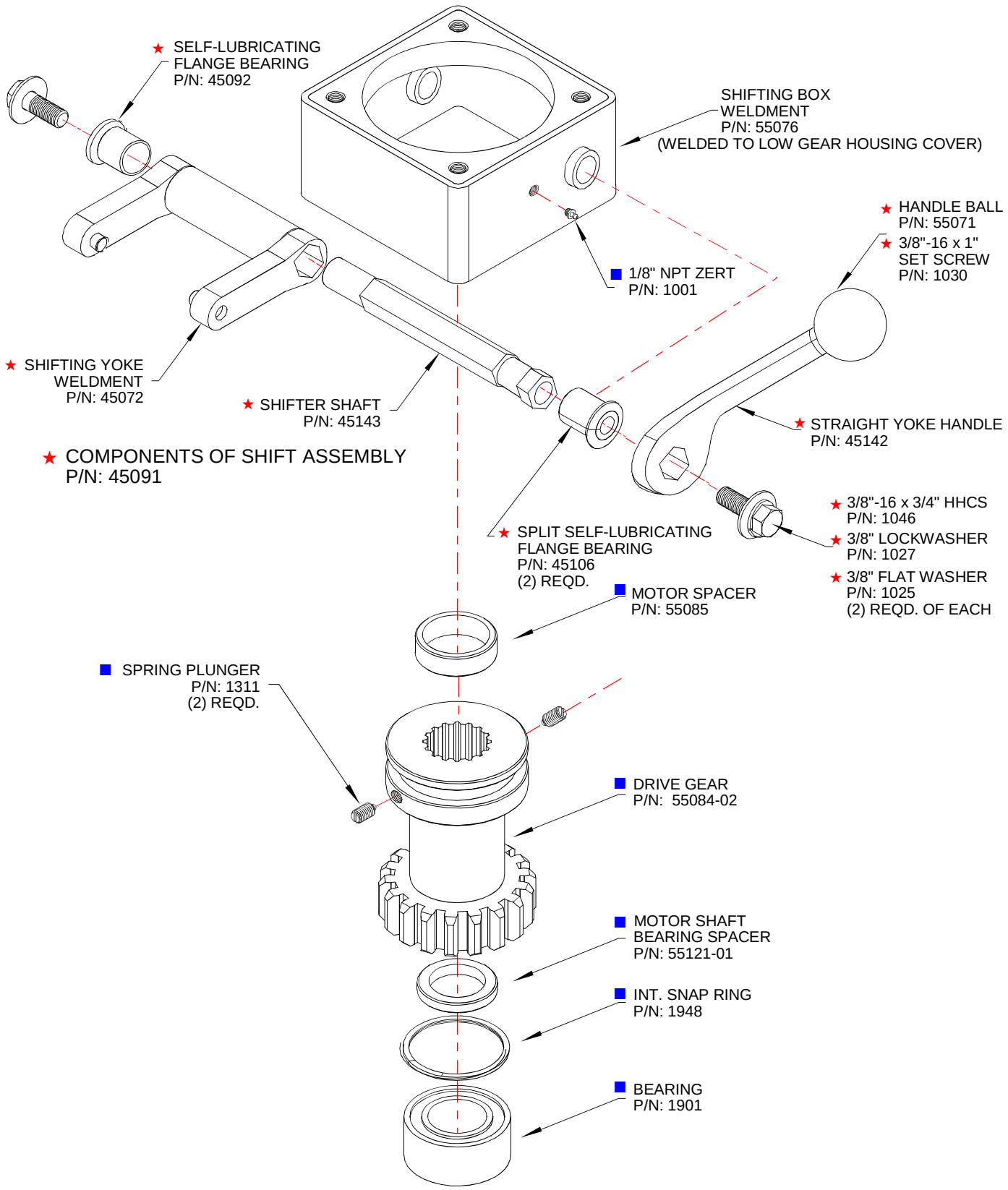
★ SELF-LUBRICATING FLANGE BEARING P/N: 45092
SHIFTING BOX WELDMENT P/N: 55076 (WELDED TO LOW GEAR HOUSING COVER)
★ HANDLE BALL P/N: 55071
★ 3/8"-16 x 1" SET SCREW P/N: 1030
■ 1/8" NPT ZERT P/N: 1001
★ SHIFTING YOKE WELDMENT P/N: 45072
★ SHIFTER SHAFT P/N: 45143
★ STRAIGHT YOKE HANDLE P/N: 45142
★ COMPONENTS OF SHIFT ASSEMBLY P/N: 45091
★ 3/8"-16 x 3/4" HHCS P/N: 1046
★ 3/8" LOCKWASHER P/N: 1027
★ 3/8" FLAT WASHER P/N: 1025 (2) REQD. OF EACH
★ SPLIT SELF-LUBRICATING FLANGE BEARING P/N: 45106 (2) REQD.
■ MOTOR SPACER P/N: 55085
■ SPRING PLUNGER P/N: 1311 (2) REQD.
■ DRIVE GEAR P/N: 55084-02
■ MOTOR SHAFT BEARING SPACER P/N: 55121-01
■ INT. SNAP RING P/N: 1948
■ BEARING P/N: 1901

SHIFT GEAR ASSEMBLY

2nd GENERATION

ASSEMBLY NO. 26078 ■

SUPERIOR Manufacturing & Hydraulics
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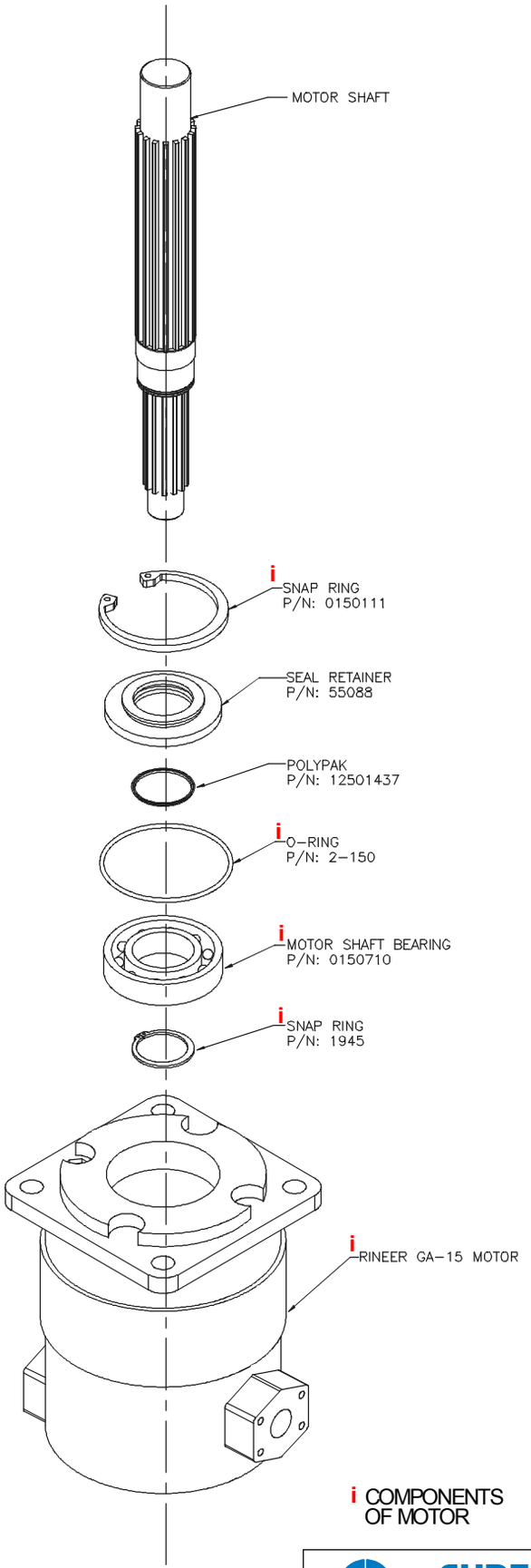
REV. #	LOG #	DATE
4		09/13/05

REF: S:\Equip Manuals\Dwgs\CLE14000DP\Shift Assy 2nd rev4.wpg



i COMPONENTS OF MOTOR

MOTOR ASSEMBLY

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BROUSSARD, LA 70518
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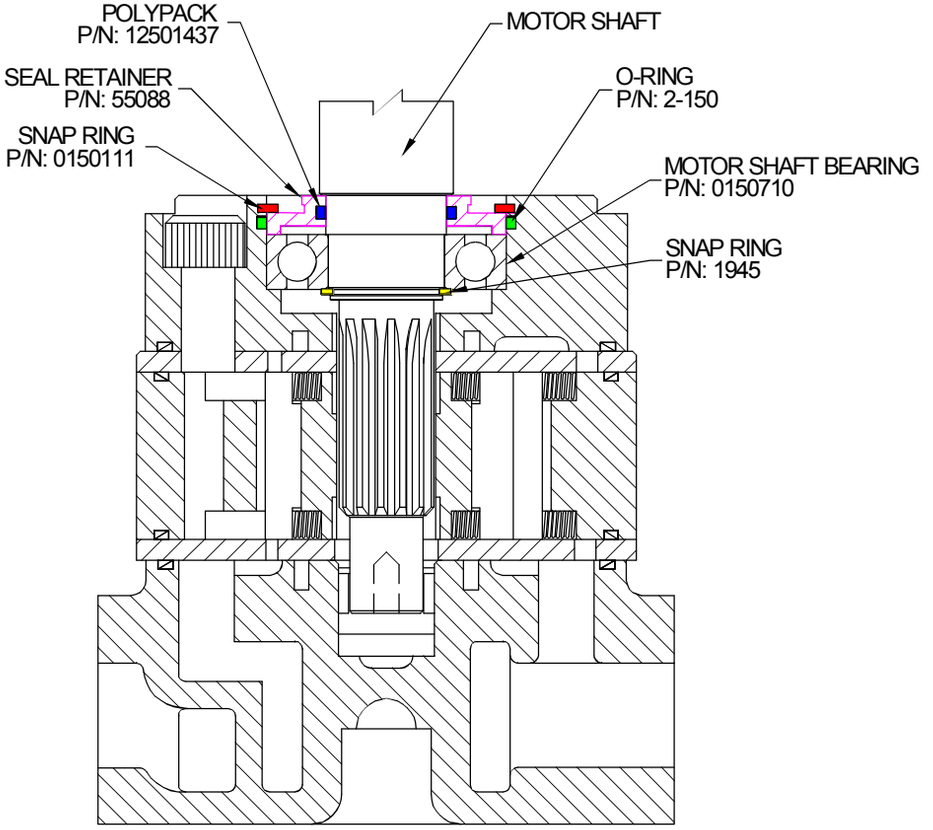
REV. #	LOG #	DATE
		06/07/02

REF: S:\Equip Manuals-Dwgs\Motor\Motor CLE5500+ sht1.wpg



W/ OUT WIPER RING

MOTOR ASSEMBLY

FOR CLARITY PURPOSE ONLY
NOT TO SCALE

SUPERIOR Manufacturing & Hydraulics
4225 HWY. 90 EAST
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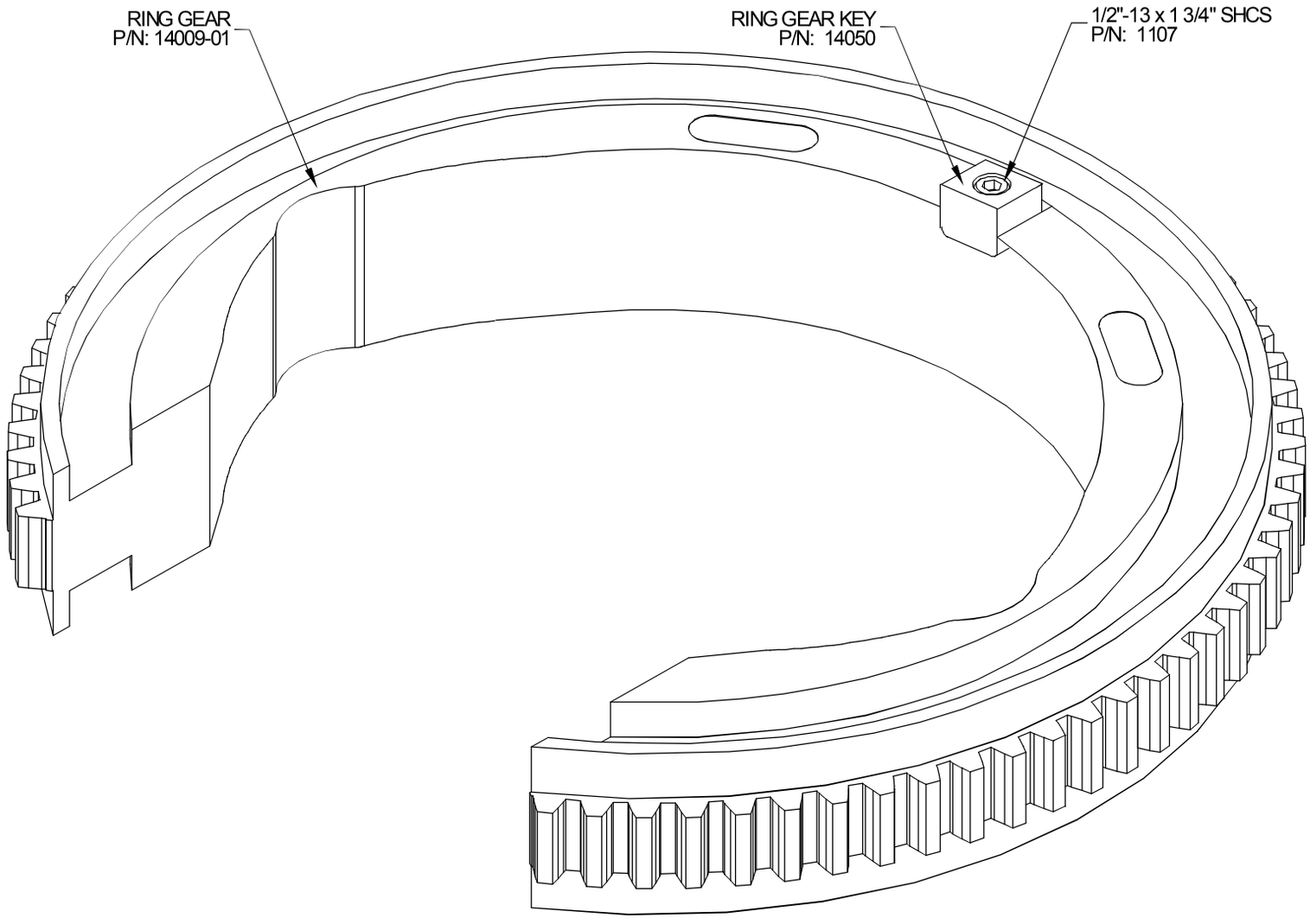
REV. #	LOG #	DATE
2		04/29/03

REF: S:\Equip Manuals-Dwgs\Motor\Motor CLE5500+ sht2 rev2.wpg



RING GEAR ASSEMBLY

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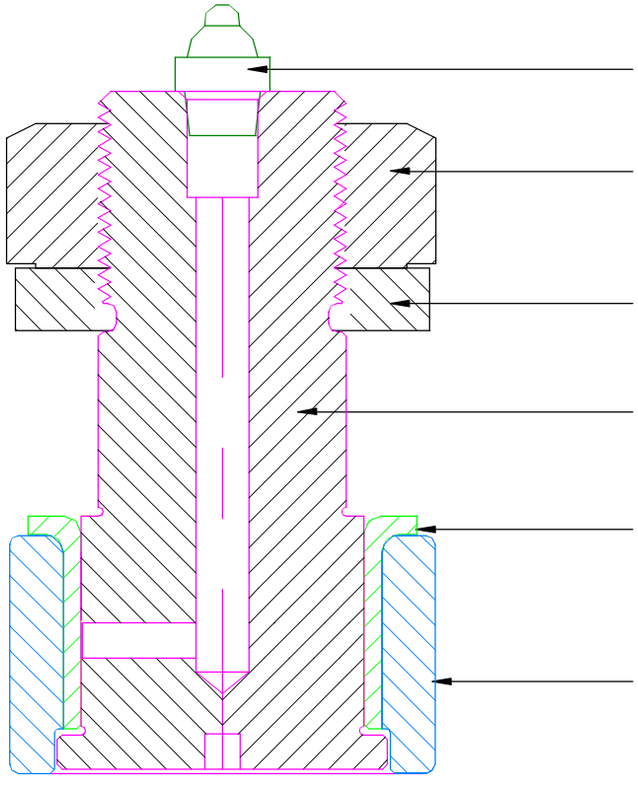
		07/01/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Ring Gear.wpg



1/4" DRIVE ZERT
P/N: 1257

7/8"-14 JAM NUT
P/N: 1178
[NOT PART OF ASSEMBLY
FOR REFERENCE ONLY]

7/8" LOCKWASHER
P/N: 1224
[NOT PART OF ASSEMBLY
FOR REFERENCE ONLY]

CAM FOLLOWER STUD
P/N: SSCF1501

FLANGE BUSHING
P/N: SSCF1503
(NOTE 2)

CAM FOLLOWER RACE
P/N: SSCF1502

NOTES:

1. LUBRICATE THREADS WITH NEVER-SEEZ. TORQUE TO 62 1/2 FT/LBS.
2. PRESS INTO RACE USING FX-16DU12.

SECTION VIEW

1 1/2" SEVERE SERVICE CAM FOLLOWER

ASSEMBLY NUMBER SSCF1500

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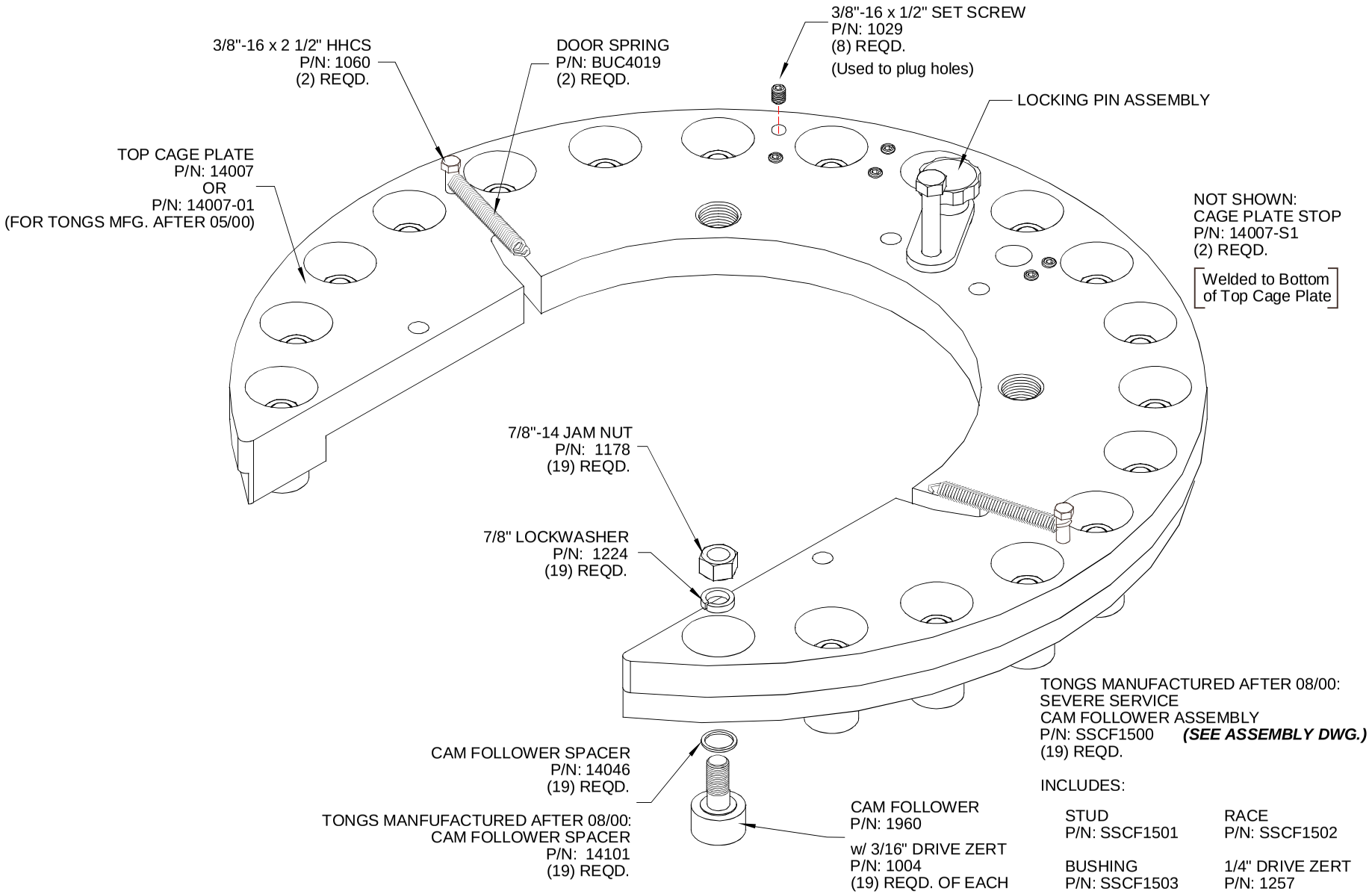
		12/28/00
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\CLE14000\SSCF1500 Cam Foll.wpg



TOP CAGE PLATE ASSEMBLY

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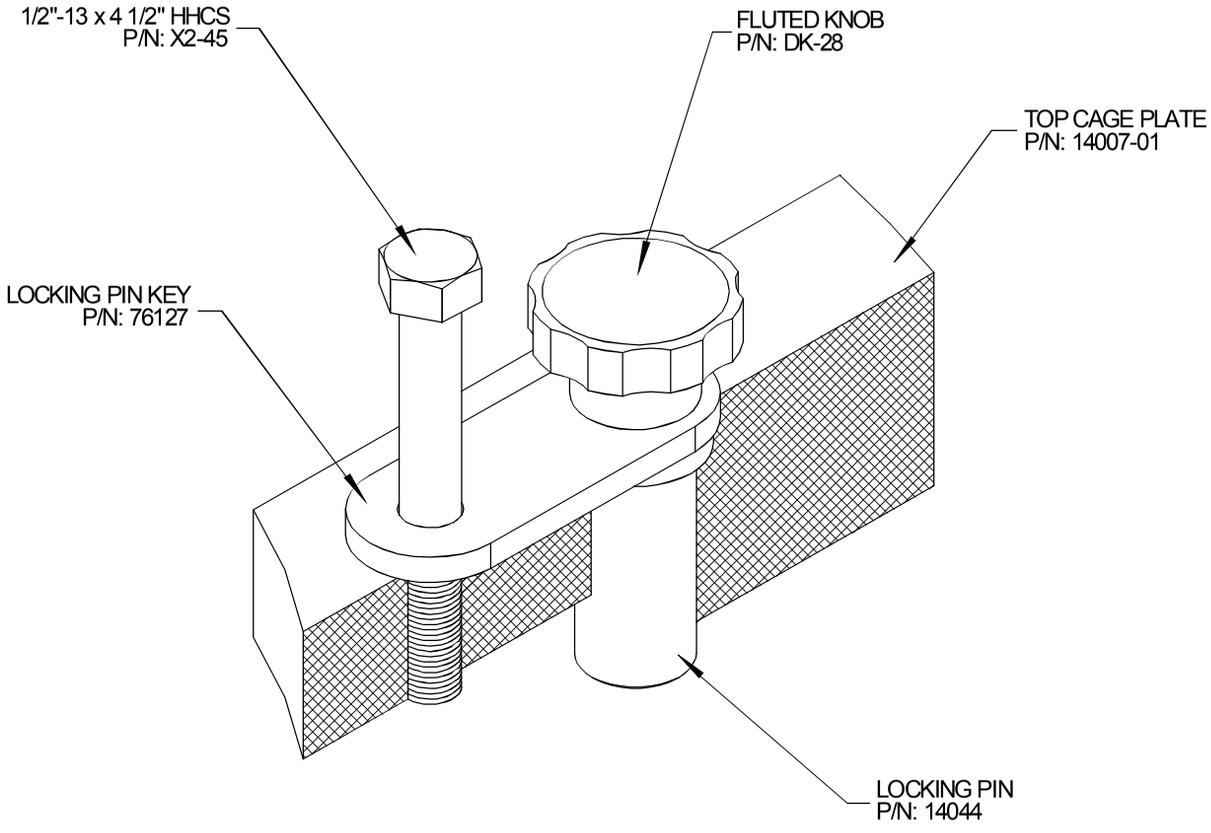
REV. #	LOG #	DATE
7		02/06/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000\Cage Plate Top rev7.wpg



LOCKING PIN ASSEMBLY

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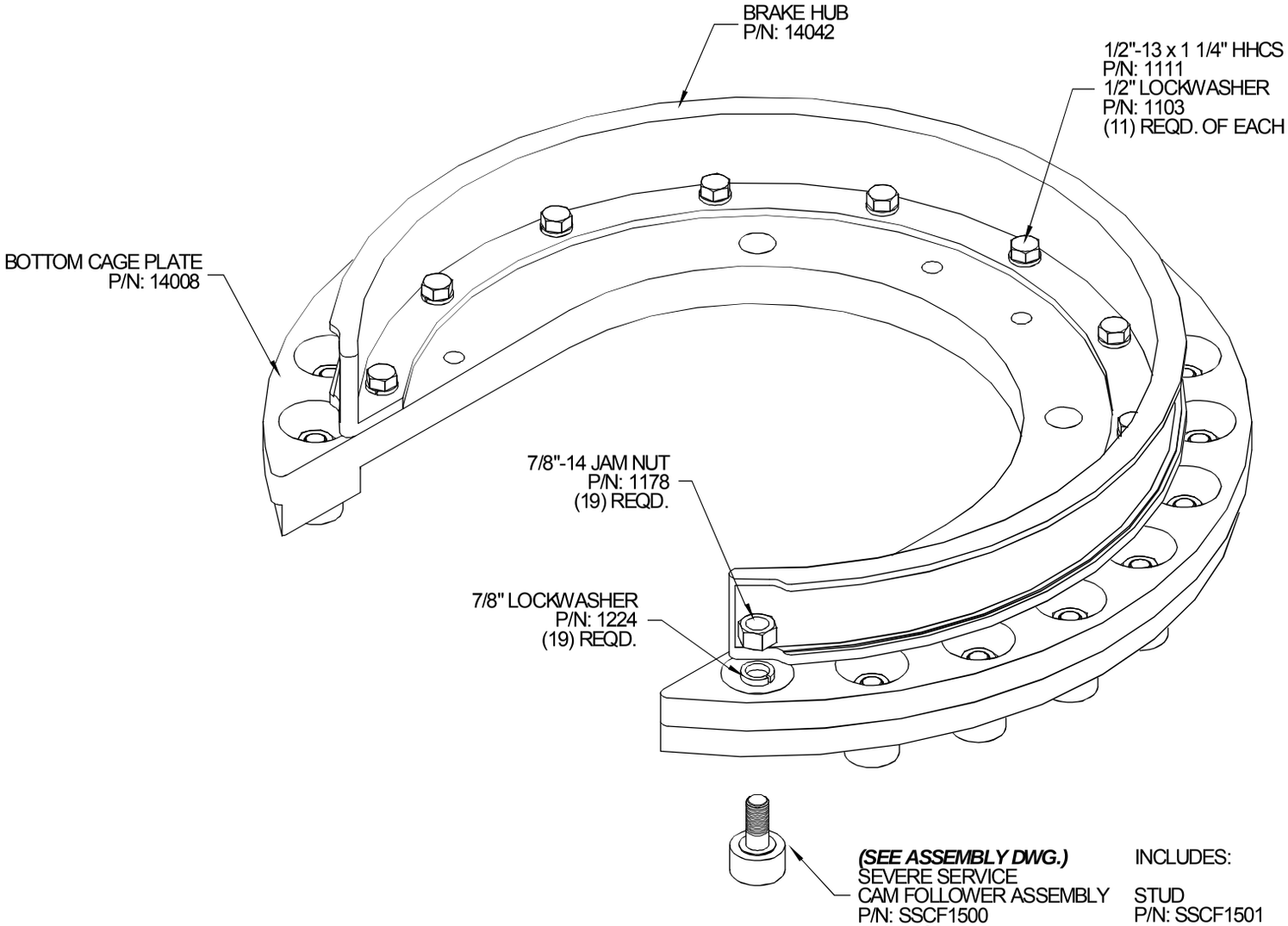
		07/02/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Locking Pin.wpg



INCLUDES:

STUD P/N: SSCF1501	RACE P/N: SSCF1502
BUSHING P/N: SSCF1503	1/4" DRIVE ZERT P/N: 1257

BOTTOM CAGE PLATE ASSEMBLY

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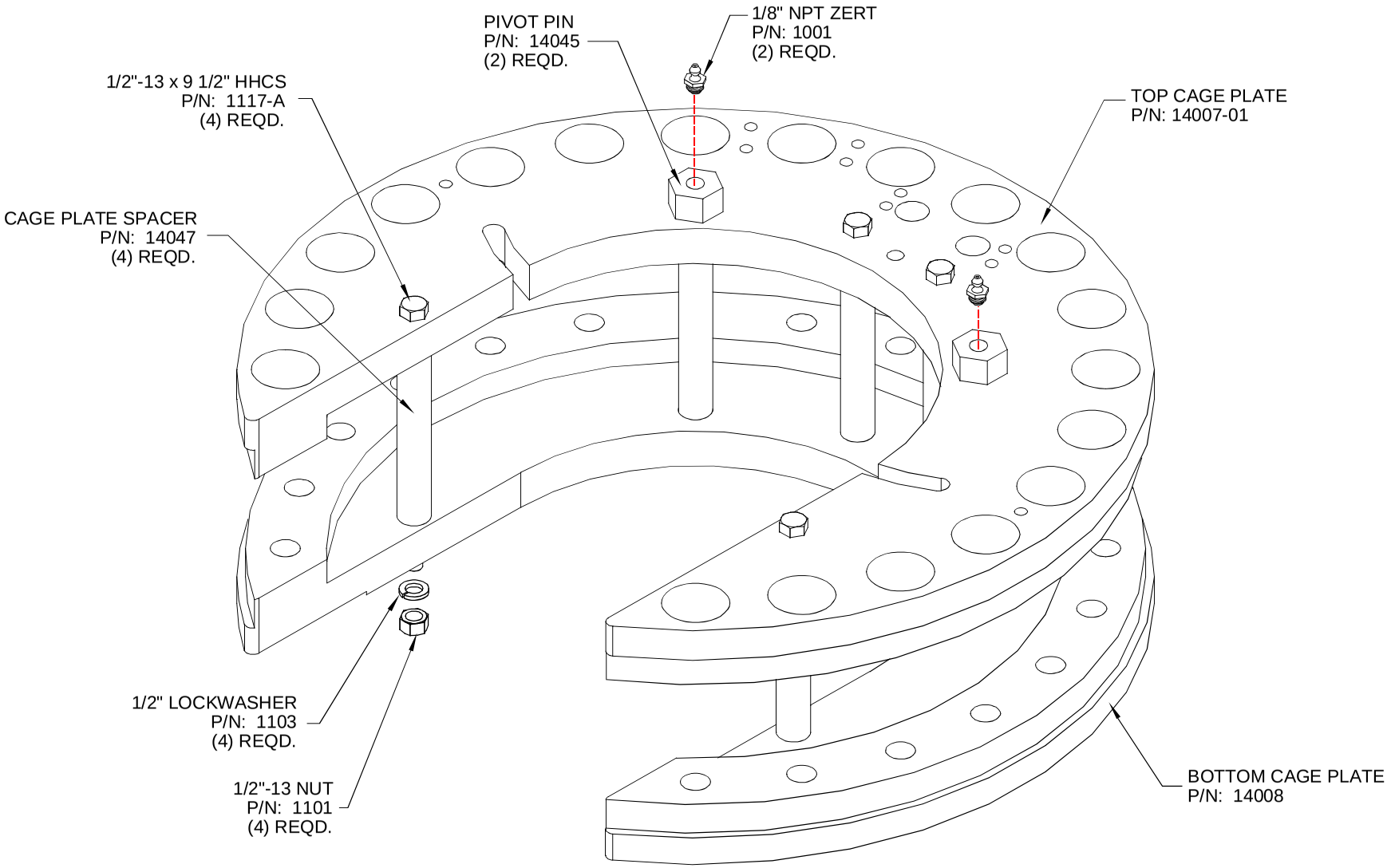
REV. #	LOG #	DATE
		07/02/03

REF: S:\Equip Manuals\Dwgs\CLE14000-05\Cage Plate Bottom.wpg



CAGE PLATE SPACER ILLUSTRATION

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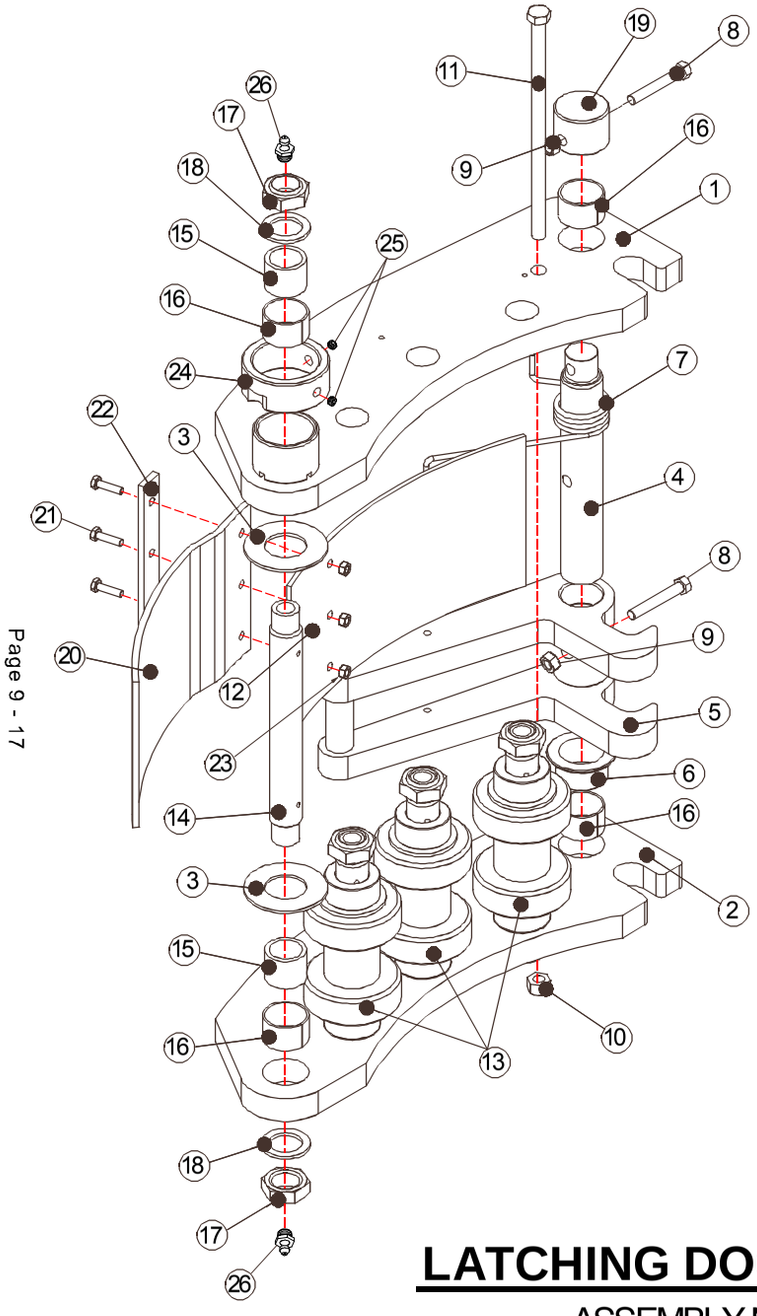
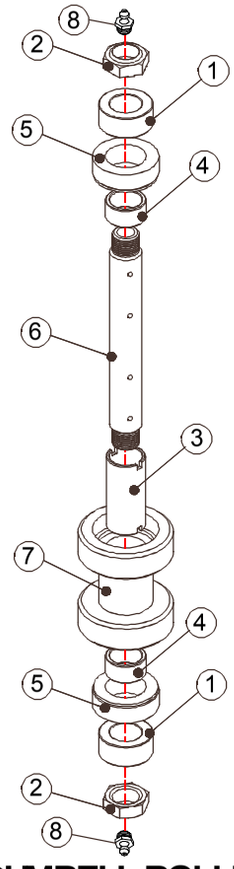
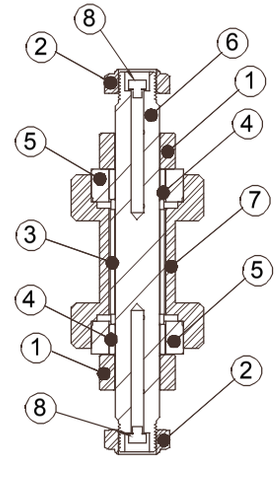
REV. #	LOG #	DATE
1		02/09/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000-05\Spacer Illustr rev1.wpg



Item	Qty.	Part Number	Description
1	1	14114-01	TOP DOOR PLATE WELDMENT
2	1	14113-01-S1	BOTTOM DOOR PLATE
3	2	14116	DOOR THRUST BUSHING
4	1	14682-01	DOOR LATCH PIVOT PIN
5	1	14681-01	DOOR LATCH WELDMENT
6	1	55027	DOOR BUSHING
7	1	SMH1501-N	TORSION SPRING
8	2	1060	3/8"-16 x 2 1/2" HHCS
9	2	213	3/8"-16 NYLOCK NUT
10	1	1101	1/2"-13 HEX NUT
11	1	1117-A	1/2"-13 x 9 1/2" HHCS
12	1	14118-01	DUMBELL ROLLER GUARD
13	3	14148 i	DUMBELL ROLLER ASSEMBLY
14	1	14120-01	DOOR SHAFT
15	2	14121	SPACER
16	4	2021	GARLOCK BUSHING 1 1/2" x 1"
17	2	1213	1"-12 LOW PROFILE NYLOCK NUT
18	2	2040	DOOR BUSHING
19	1	73177	DOOR PIVOT PIN PROTECTOR
20	1	14150	RUBBER GUARD
21	3	105	1/4"-20 x 1" HHCS
22	1	14151	SUPPORT STRIP
23	3	100	1/4"-20 HEX NUT
24	1	76131	DOOR SWITCH ADJ. SLEEVE
25	2	1029	3/8"-16 x 1/2" SET SCREW
26	2	1001	1/8" NPT ZERT

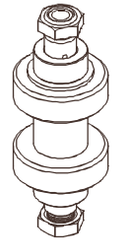




SECTION

DUMBELL ROLLER ASSEMBLY

ASSEMBLY NO. 14148 i



Item	Qty.	Part Number	Description
1	2	14113-S2	DOOR DOUBLER
2	2	1213	1"-12 LP NYLOCK NUT
3	1	55027-D	DUMBELL ROLLER SPACER
4	2	55192	DUMBELL ROLLER SPACER
5	2	55191	DUMBELL ROLLER BUSHING
6	1	55022-A	SHAFT
7	1	14123	DOOR ROLLER
8	2	1001	1/8" NPT ZERT

LATCHING DOOR ASSEMBLY

ASSEMBLY NO. 14140-02

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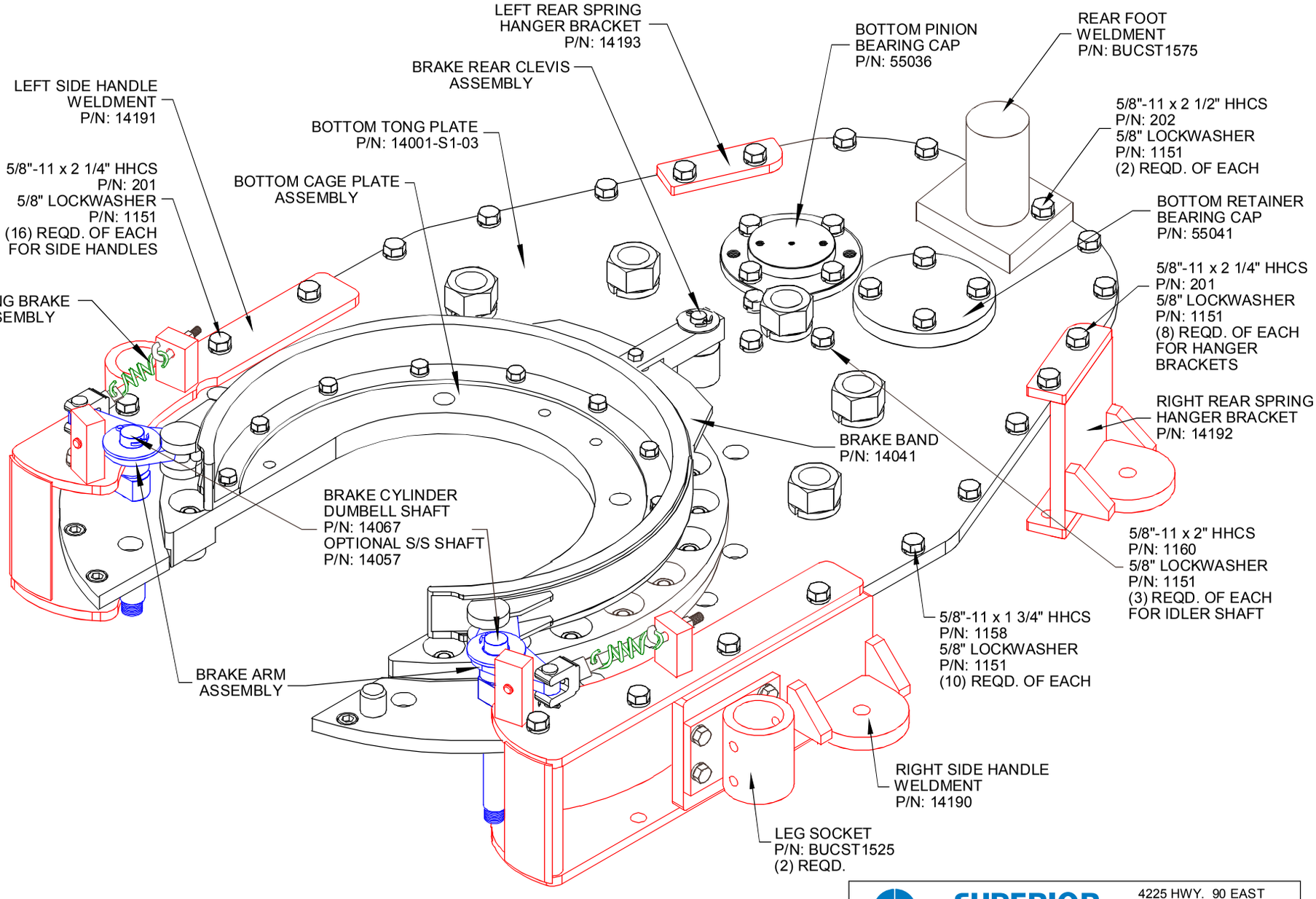
		06/18/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-04\Door Assy.wpg



BOTTOM PLATE ASSEMBLY

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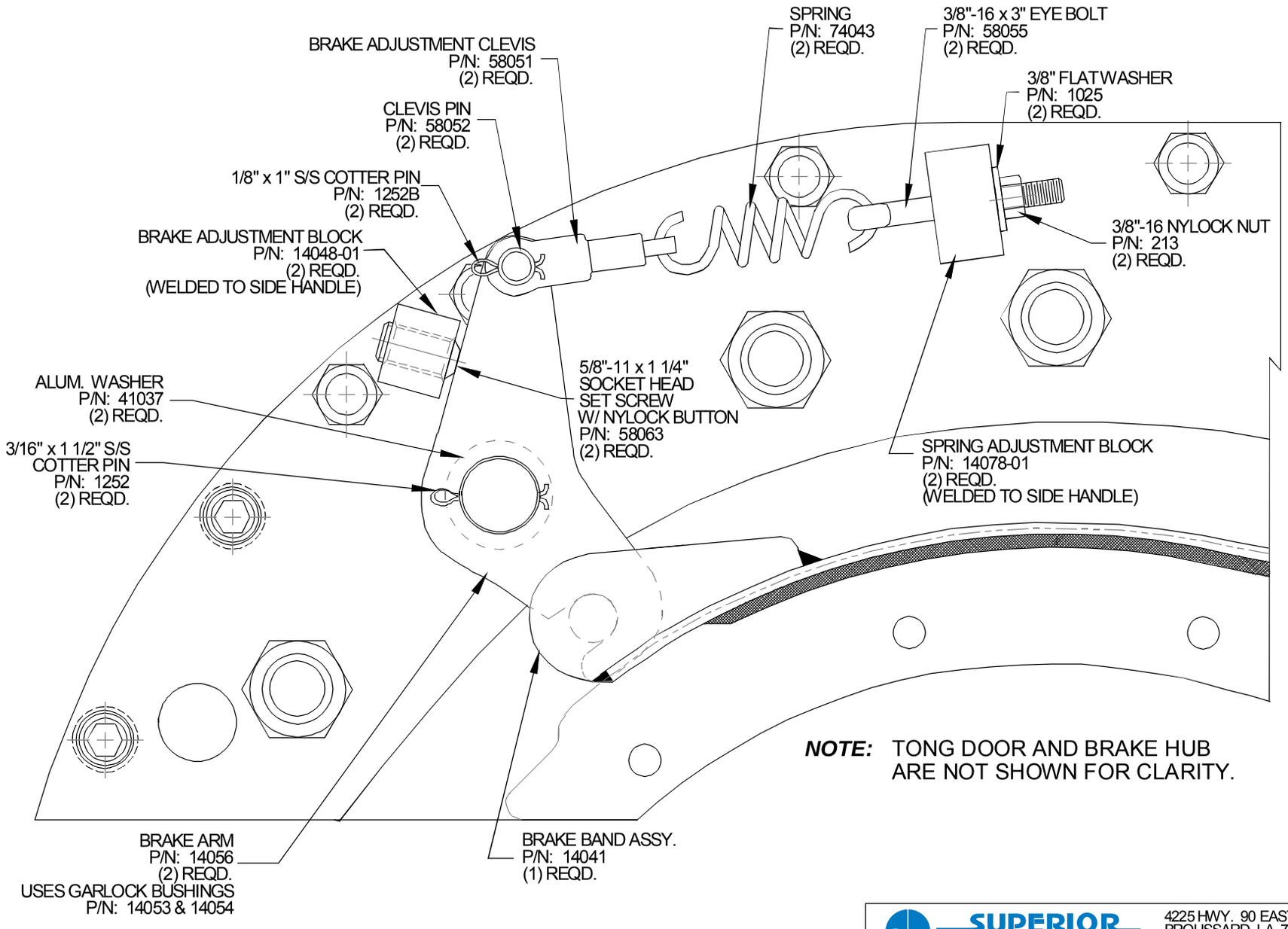
REV. #	LOG #	DATE
		07/08/03

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Bottom Plate.wpg



NOTE: TONG DOOR AND BRAKE HUB ARE NOT SHOWN FOR CLARITY.

SPRING ACTIVATED BRAKE SYSTEM

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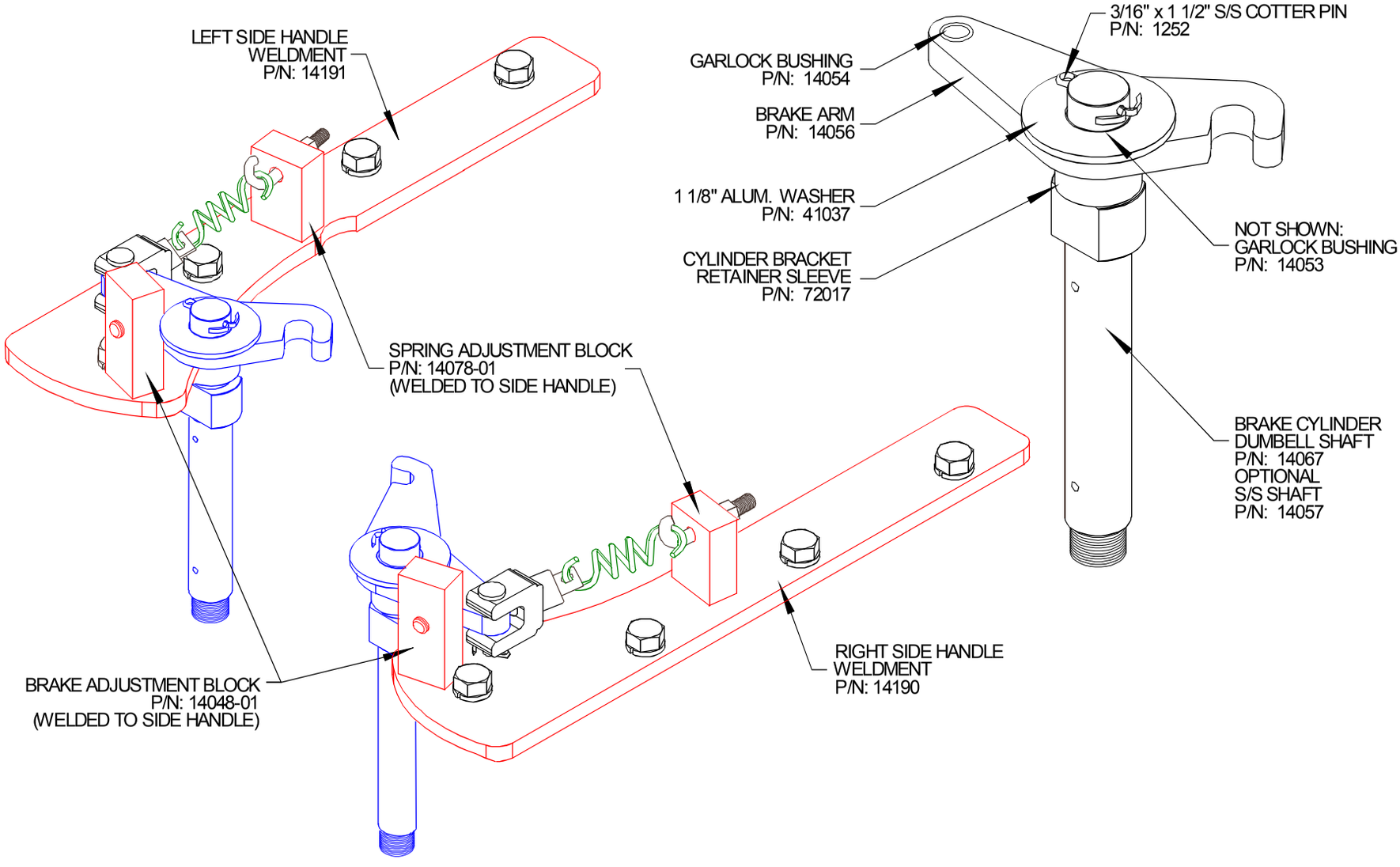
		07/03/03
REV.#	LOG#	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Spring Brake.wpg



BRAKE ARM & SPRING BRAKE ASSEMBLY

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		07/03/03
REV. #	LOG #	DATE

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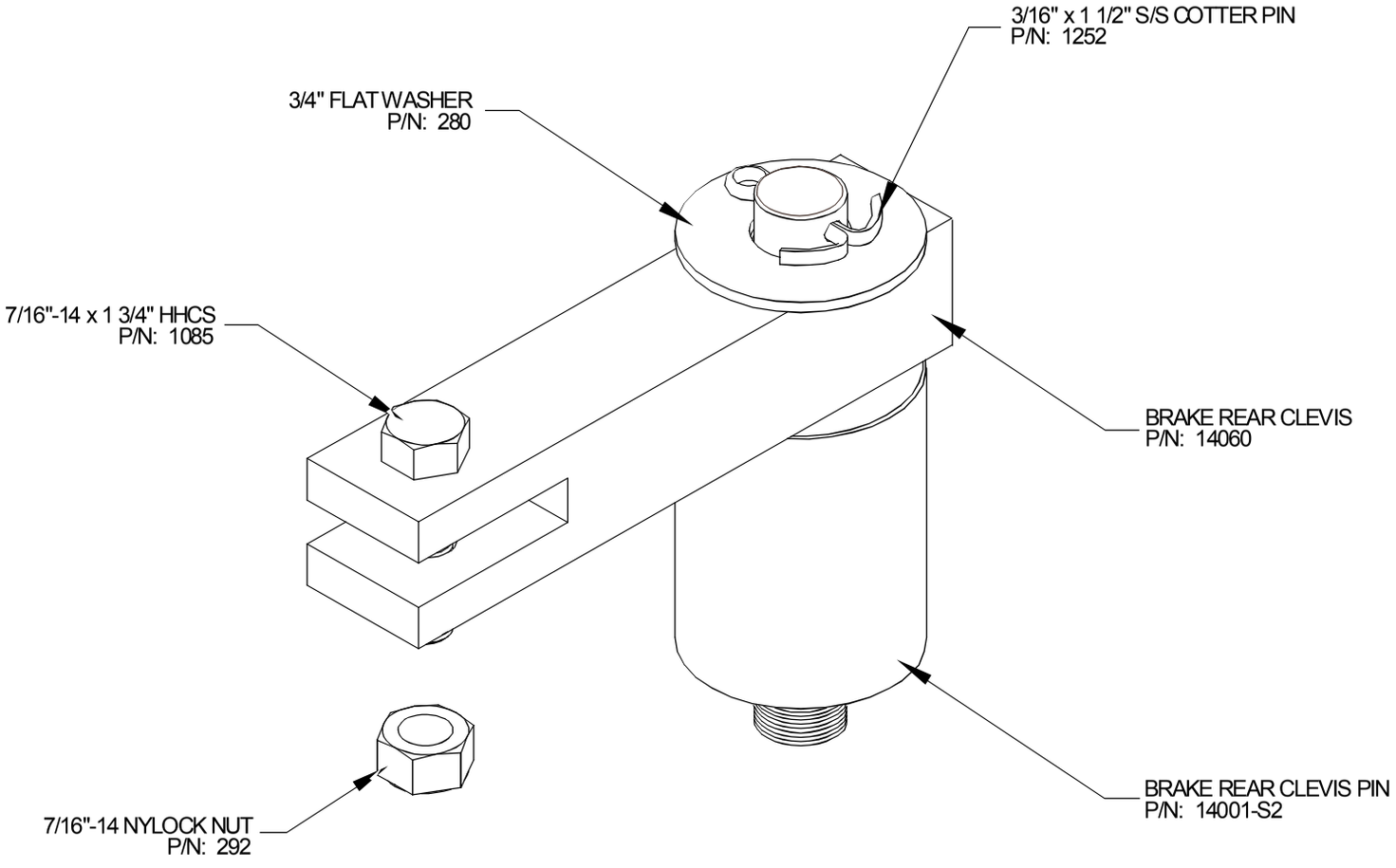

BRAKE REAR CLEVIS ASSEMBLY

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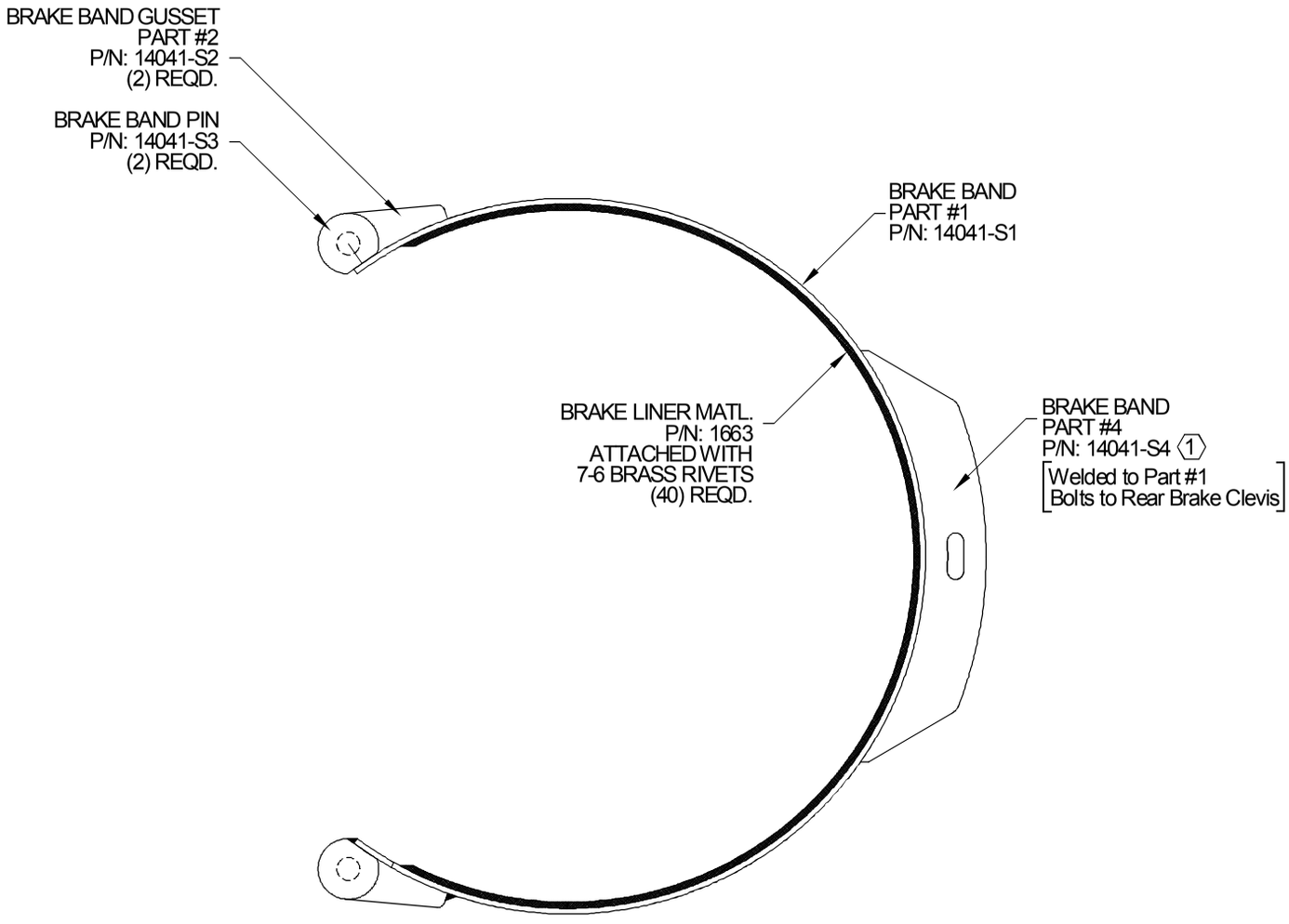
		07/03/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Rear Clevis.wpg



⟨1⟩ SAL 06-22-98 ADDED PART 14041-S4

BRAKE BAND ASSEMBLY

ASSEMBLY NUMBER 14041

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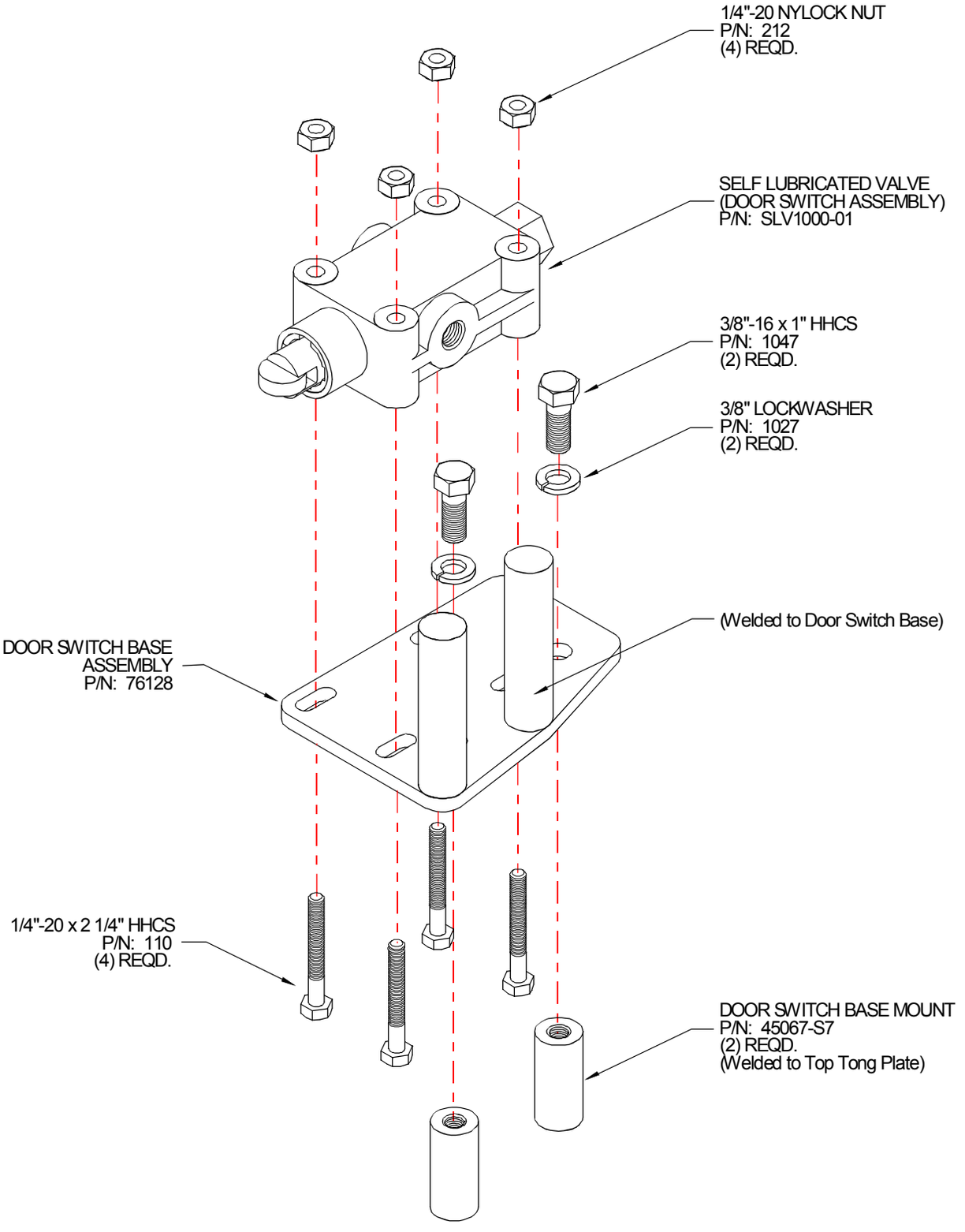
		01/09/01
REV. #	LOG #	DATE

REF: S:\Equip Manuals\Dwgs\CLE14000\Brake Band Assy.wpg



DOOR SWITCH ASSEMBLY

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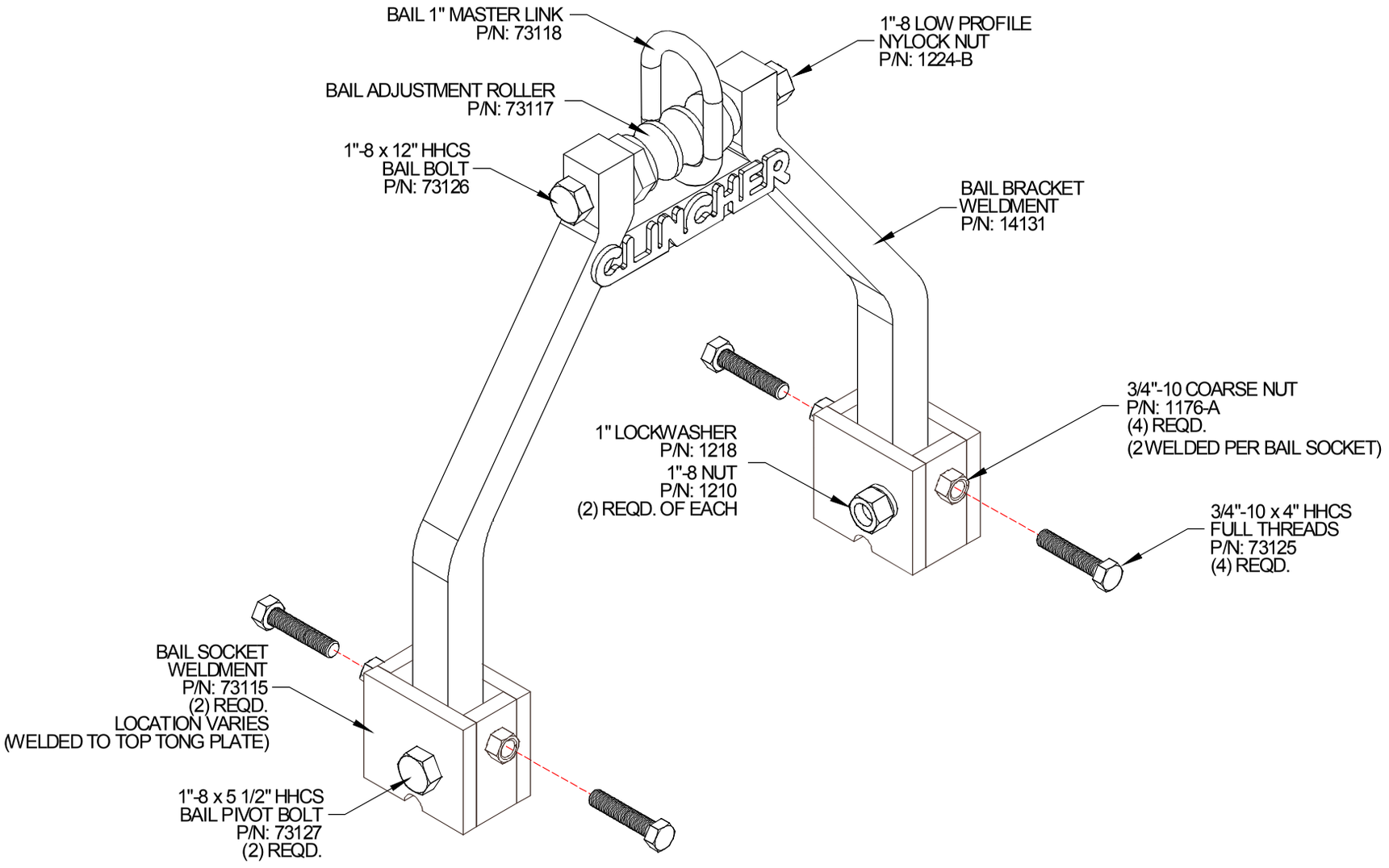
REV. #	LOG #	DATE
2	00-01-017	01/10/00

REF: S:\Equip Manuals-Dwgs\CLE14000\Door Switch rev2.wpg



BAIL ASSEMBLY

ASSEMBLY NUMBER 14130

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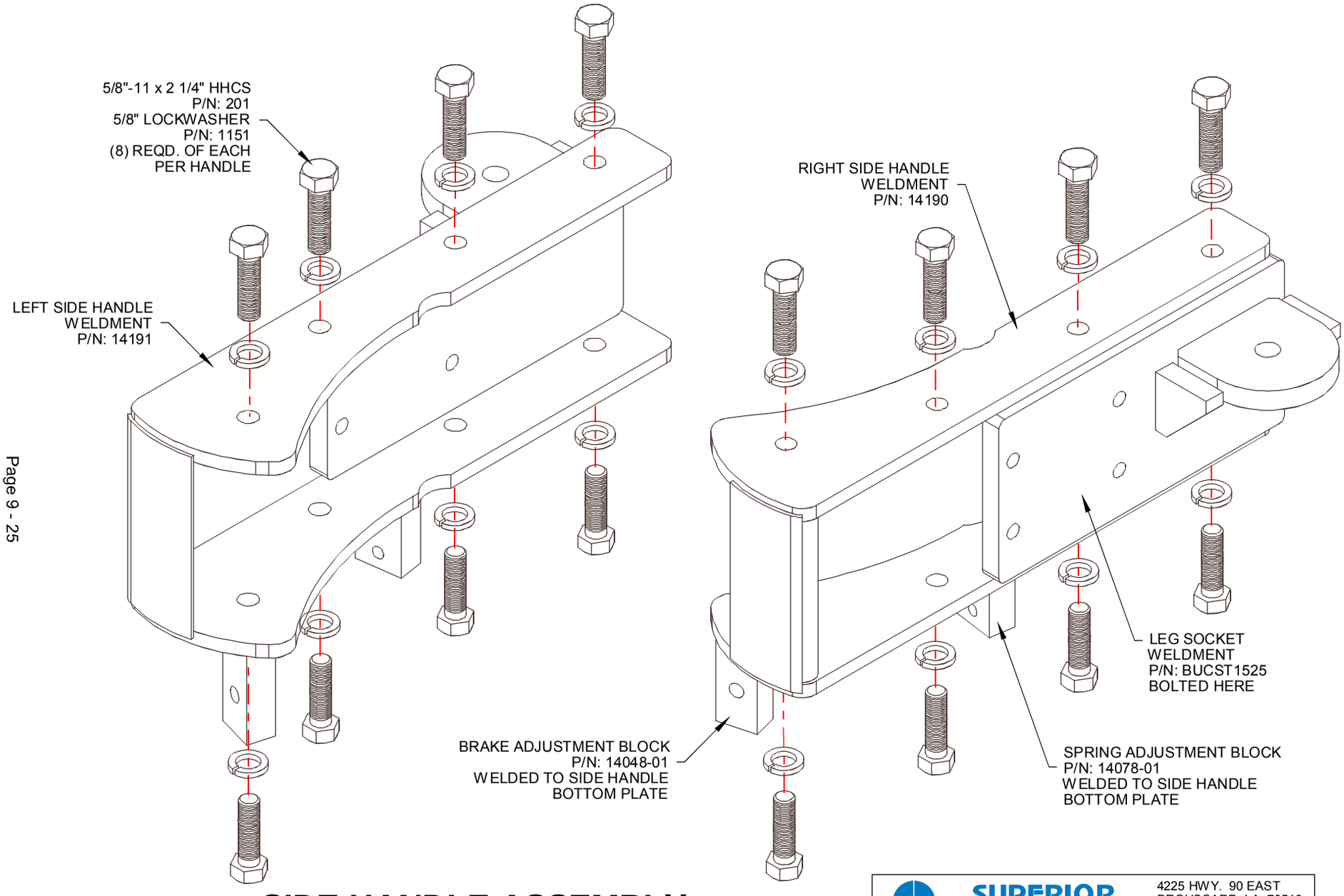
		07/03/03
REV. #	LOG #	DATE

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Bail Assy.wpg



SIDE HANDLE ASSEMBLY

RIGHT SIDE HANDLE WELDMENT NO. 14190
LEFT SIDE HANDLE WELDMENT NO. 14191

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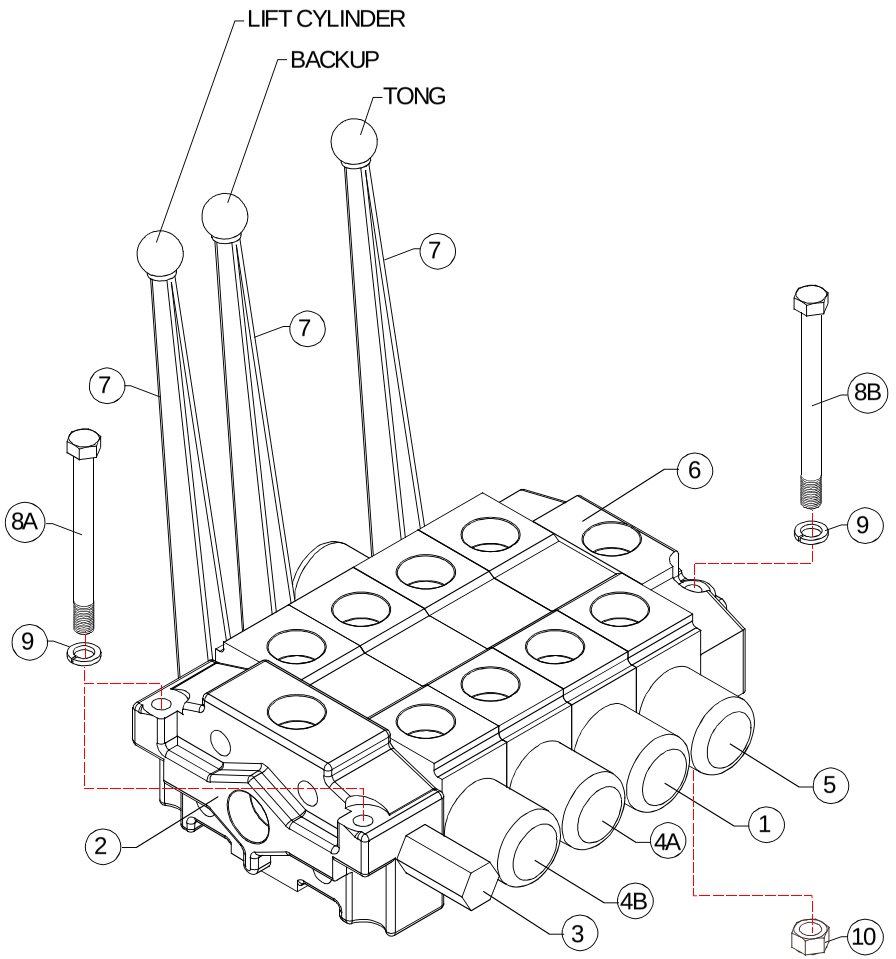
REV. #	LOG #	DATE
		07/03/03

REF: S:\Equip Manuals-Dwgs\CLE14000-05\Side Hdle.wpg

A35 VALVE BANK ASSEMBLY

Item #	Qty.	Part Number	Description
1	1	14213	CONTROL VALVE ASSEMBLY - MODIFIED VA35-WDA4
			BEFORE 04/15/04
1 OR	1	VA35-MOD	WORK SECTION
			AFTER 04/15/04
2	1	VA35-AA440	INLET VALVE W/O RELIEF
3	1	DVG35-HMRV 2	RELIEF CARTRIDGE
4A	1	VA35-DA4	WORK SECTION
4B	1	VA35-SA4	WORK SECTION
5	1	VA35-MA4	WORK SECTION
6	1	VA35-TR55	OUTLET SECTION
7	3	A35-V1526K-8	A35 8" HANDLE
8A	2	X2-40	HHCS 1/2"-13 x 4 1/4"
8B	1	X2-45	HHCS 1/2"-13 x 4 1/2"
9	3	1103	LOCKWASHER 1/2"
10	1	1101	1/2"-13 HEX NUT



VALVE BANK ASSEMBLY

ASSEMBLY NO. 14195

Rev.	Date	Description
2	08/19/05	Item 3 - Chg.PN from A35-MRV-1 to DVG35-HMRV; ECN#05-0064.
1	10/21/04	Item 1 - VA35-MOD for Production after 04/15/04.

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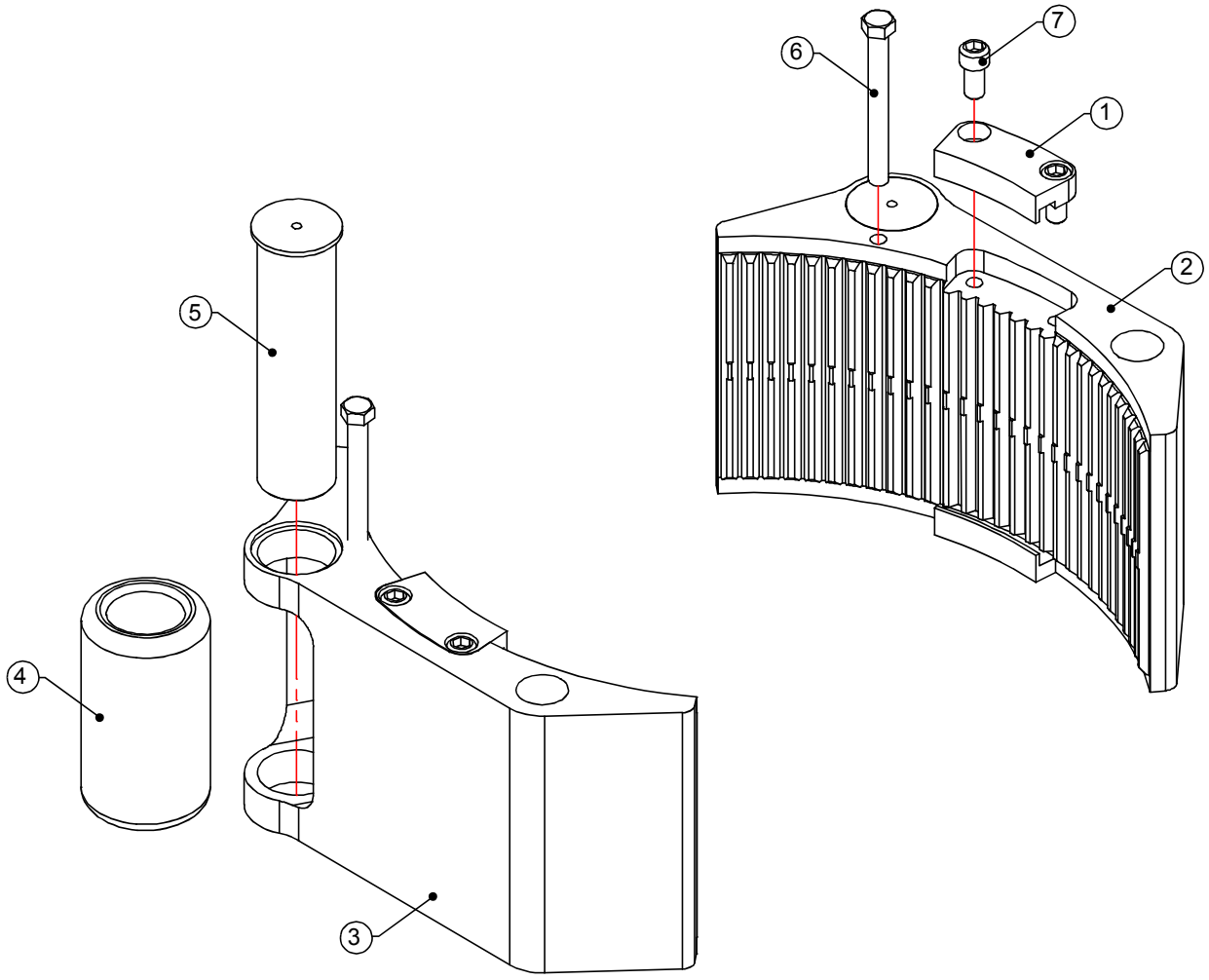
REV. #	LOG #	DATE
2		08/22/05

REF: S:\Equip Manuals\Dwgs\CLE14000-05\Valve Bank 4 rev2.wpg

Item	Qty.	Part Number	Part Name
1	4	14618	JAW CLIP
2	1	14619L	14" x 14" LEFT SPLINED JAW
3	1	14619R	14" x 14" RIGHT SPLINED JAW
4	2	14059-01	JAW ROLLER
5	2	76013-01	JAW PIN
6	2	1071	3/8"-16 x 3 1/2" HHCS
7	8	1040-A	3/8"-16 x 3/4" SHCS



USES:
FINE TOOTH STEEL DIES
P/N: CLE1400-XXXX
GRIT FACE™ DIES
P/N: BB1400-XXXX

14" x 14" SPLINED JAW SET ASSEMBLY

ASSEMBLY NO. CJ-14A

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REV. #	LOG #	02/06/06 DATE

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000\Jaw CJ-14A.wpg

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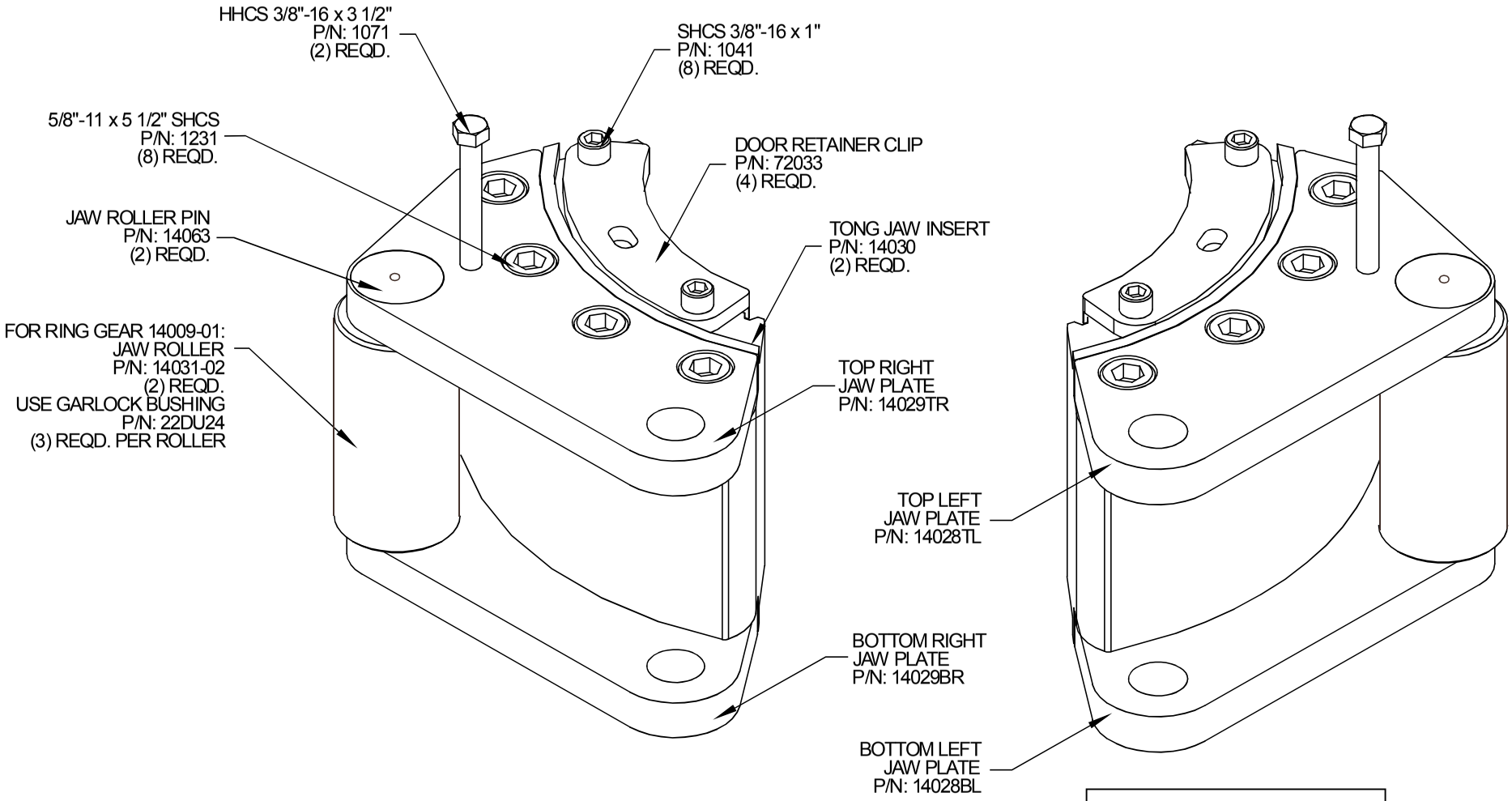

USES:
FINE TOOTH STEEL DIES
P/N: BUC7625-XXXX
GRIT FACE™ DIES
P/N: BB7625-XXXX

14" x 4 1/2" - 7 5/8" LOW FRICTION TONG JAW ASSEMBLY

Assembly Number: CJ-LF-14A

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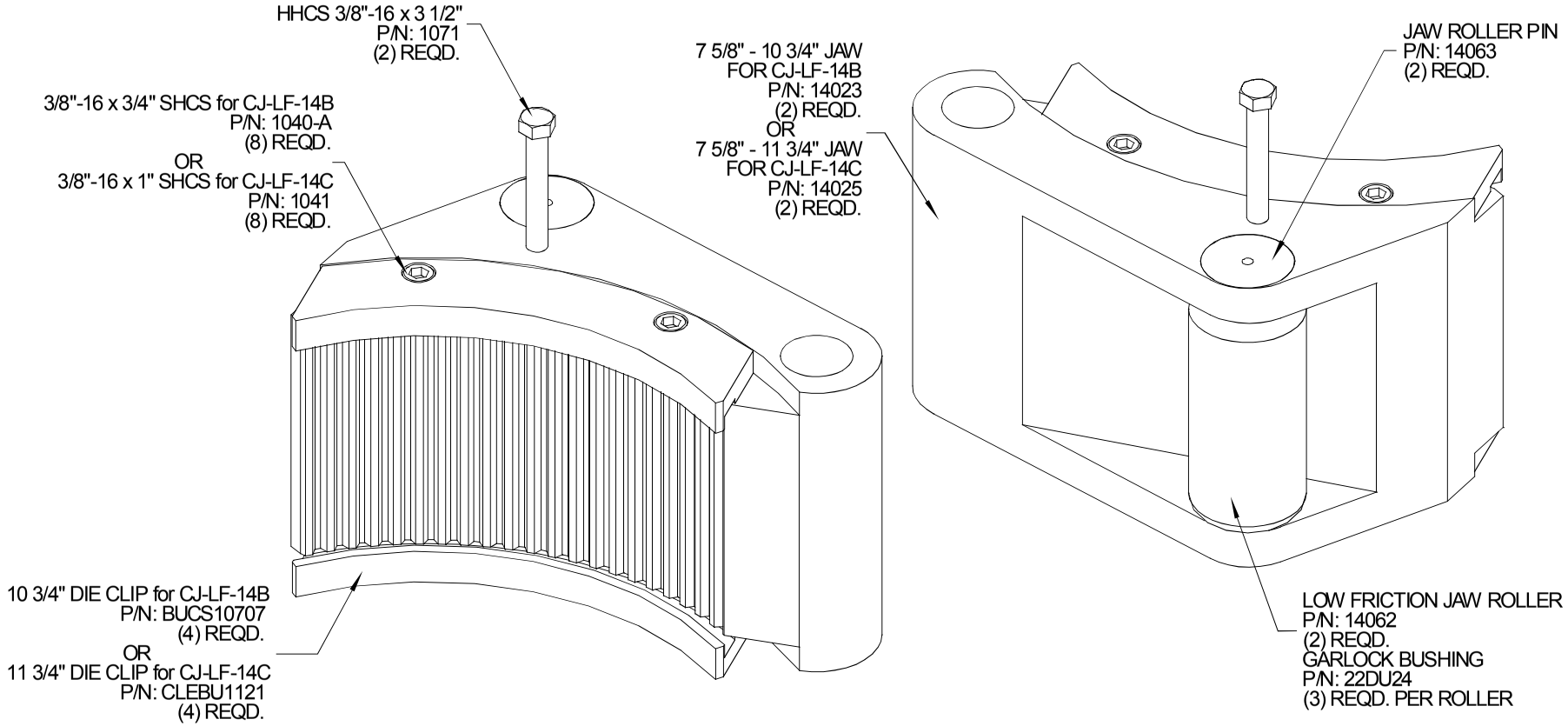
REV. #	LOG #	DATE
1		02/06/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000-05\Jaw LF-14A rev1.wpg



CJ-LF-14B USES:
FINE TOOTH STEEL DIES
P/N: BUCM1075-XXXX
GRIT FACE™ DIES
P/N: BB1075-XXXX

CJ-LF-14C USES:
FINE TOOTH STEEL DIES
P/N: CLEBU1175-XXXX
GRIT FACE™ DIES
P/N: BB1175-XXXX

14" TONG LOW FRICTION JAW SET ASSEMBLY

7 5/8" - 10 3/4" Assembly Number CJ-LF-14B
7 5/8" - 11 3/4" Assembly Number CJ-LF-14C

(Right & Left Jaw are reversible and interchangeable)

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4		02/06/06
REV. #	LOG #	DATE

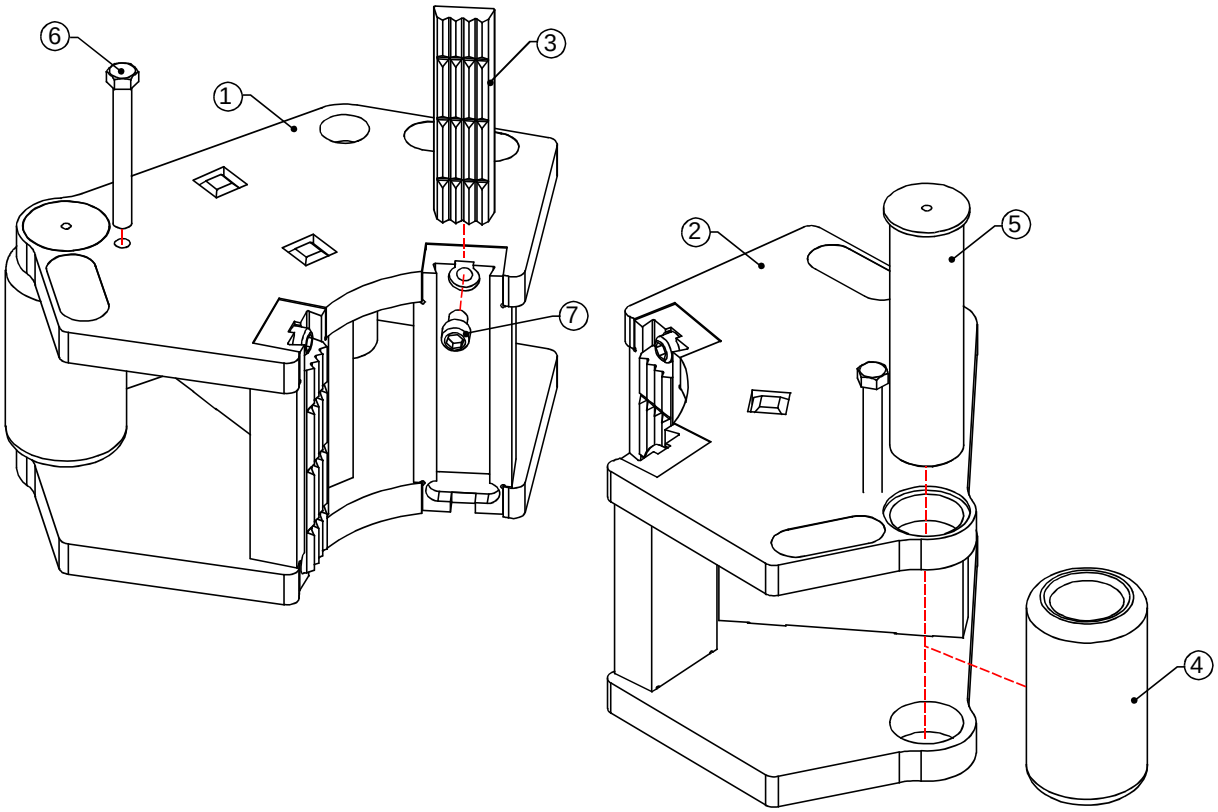
REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000\Jaw LF-14B&C rev4.wpg

Size	Jaw Set Assembly Number	Left Jaw Weldment Part Number	Right Jaw Weldment Part Number
5"	CJDT14H05000	14H05000L	14H05000R
5 1/2"	CJDT14H05500	14H05500L	14H05500R
6 5/8"	CJDT14H06625	14H06625L	14H06625R
7	CJDT14H07000	14H07000L	14H07000R
7 5/8"	CJDT14H07625	14H07625L	14H07625R
8 5/8"	CJDT14H08625	14H08625L	14H08625R
9 5/8"	CJDT14H09625	14H09625L	14H09625R
9 7/8"	CJDT14H09875	14H09875L	14H09875R
10 5/8"	CJDT14H10625	14H10625L	14H10625R
10 3/4"	CJDT14H10750	14H10750L	14H10750R
11 3/4"	CJDT14H11750	14H11750L	14H11750R
12 3/4"	CJDT14H12750	14H12750L	14H12750R

Item	Qty.	Part Number	Part Name
1	1	SEE CHART	LEFT JAW WELDMENT
2	1	SEE CHART	RIGHT JAW WELDMENT
3	4	DTI1602	1/2" T x 1 1/4" W x 5" L STRIP DIE
4	2	14059-01	JAW ROLLER
5	2	76013-01	JAW PIN
6	2	1071	3/8"-16 x 3 1/2" HHCS
7	4	234	3/8"-16 x 1/2" SHCS

MANUFACTURE BEFORE 10/2004, USED:

4	1061	3/8"-16 x 3/4" BUTTON HD CS
4	1027	3/8" LOCKWASHER



5" THRU 12 3/4"
DOVETAIL JAW ASSEMBLY

SEE CHART FOR ASSEMBLY NUMBERS

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REV. #	LOG #	DATE
3		02/06/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000-05\Jaw DT5-1275 rev3.wpg

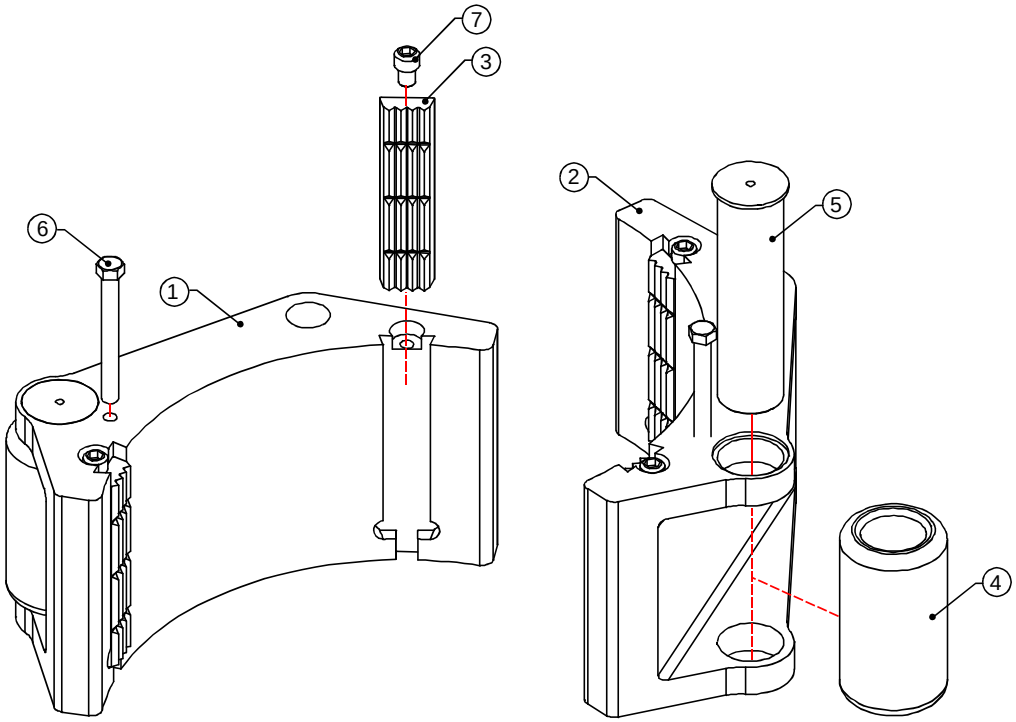
Size	Jaw Set Assembly Number	Left Jaw Weldment Part Number	Right Jaw Weldment Part Number
13 3/8"	CJDT14H13375	14H13375L	14H13375R
13 5/8"	CJDT14H13625	14H13625L	14H13625R
14"	CJDT14H14000	14H14000L	14H14000R
★ 14 3/8"	CJDT14H14375	14H14375L	14H14375R

★ **ONLY FOR 14" TONG MODELS THAT HAVE 14 3/8" CAGE PLATE OPENING.**

Item	Qty.	Part Number	Part Name
1	1	SEE CHART	LEFT JAW WELDMENT
2	1	SEE CHART	RIGHT JAW WELDMENT
3	4	DTI1602	1/2" T x 1 1/4" W x 5" L STRIP DIE
4	2	14059-01	JAW ROLLER
5	2	76013-01	JAW PIN
6	2	1071	3/8"-16 x 3 1/2" HHCS
7	4	234	3/8"-16 x 1/2" SHCS

MANUFACTURE BEFORE 10/2004, USED:

4	1061	3/8"-16 x 3/4" BUTTON HD CS
4	1027	3/8" LOCKWASHER



13 3/8" THRU 14 3/8" DOVETAIL JAW ASSEMBLY

SEE CHART FOR ASSEMBLY NUMBERS

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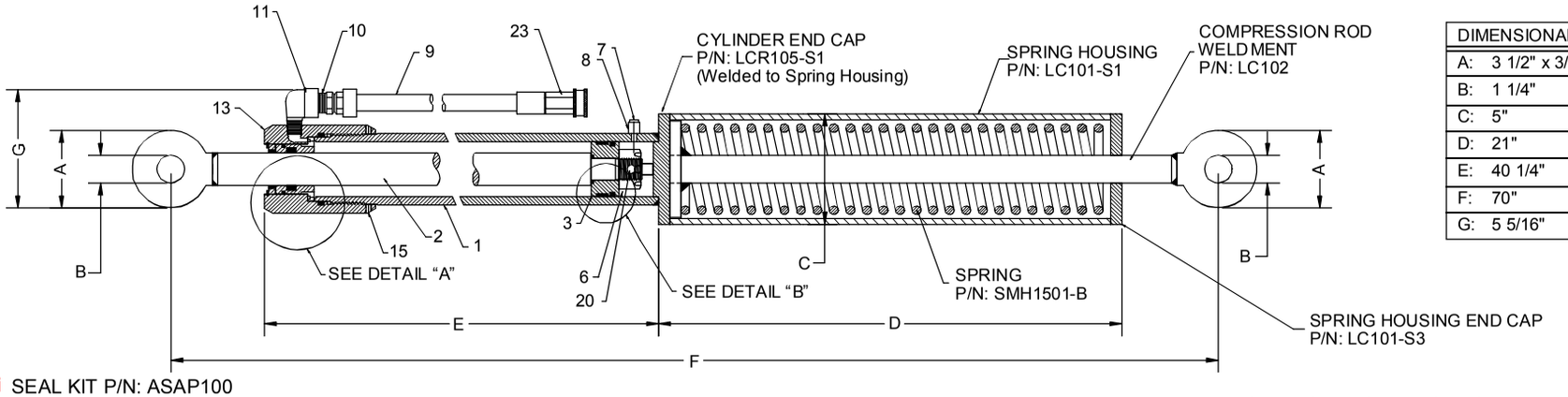
REV. #	LOG #	DATE
1		02/14/06

REF: P:\Manuals\Equip Manuals\Dwgs\CLE14000-05\Jaw DT 13375-14375 rev1.wpg

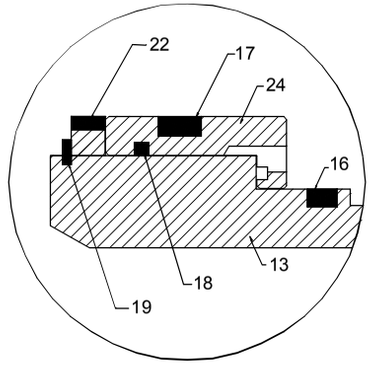


DIMENSIONAL DATA
A: 3 1/2" x 3/4"
B: 1 1/4"
C: 5"
D: 21"
E: 40 1/4"
F: 70"
G: 5 5/16"

i SEAL KIT P/N: ASAP100

BILL OF MATERIALS

	Item	Qty.	Description	P/N
	1	1	HYD/AIR CYLINDER BARREL	LCR105
	2	1	CYLINDER ROD WELDMENT	LCR112
	3	1	PISTON	LCR106
i	4	1	WEARBAND	W25000500
i	5	1	POLYPACK 2 1/8" x 2 1/2" x 3/16"	18702125
	6	1	1"-12 SLOTTED HEX NUT	1209
	7	1	1/2" FLUSH PLUG W/ 1/8" ORIFICE	1657
	8	1	1/2" HALF COLLAR	1380
	9	1	1/2" x 120" HOSE ASSY. MNPT x FJIC SWVL	LCR107-A
	10	1	3/8" MNPT x 1/2" MJIC ADAPTER	1466
	11	1	3/8" STREET EL W/ORIFICE	LCR109
	12	---	----------	----------
	13	1	GLAND CAP	LCR119
	14	---	----------	----------
	15	2	1/4"-20 x 3/8" SET SCREW	1015
i	16	1	O RING 2 7/8"ID, 3 1/4"OD, 3/16"W	2-336
i	17	1	POLYPACK 1 1/2" x 1 7/8" x 3/8"	18701500-375
i	18	1	O RING 2"ID, 2 1/4"OD, 1/8"W	2-226
	19	1	INTERNAL SNAP RING (N-1300-225)	1947
	20	1	1/4" x 1 1/2" ROLL PIN	1008-A
i	21	1	O RING 1"ID, 1 1/4"OD, 1/8"W	2-214
i	22	1	SEAL NP CR14938	CR14938
	23	1	QUICK DISCONNECT 1/2" FEMALE SNAPTITE	1430
	24	1	GLAND	LCR113



DETAIL "A"
SCALE: 3X

SPECIFICATIONS - B

MAXIMUM SPRING TRAVEL (PRELOAD TO SOLID) ..... 5.510 in.

MAXIMUM ALLOWABLE LOAD (SPRING FULLY COMPRESSED) ..... 2.854 lbs.

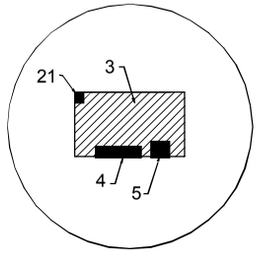
PRESSURE REQUIRED TO LIFT MAXIMUM ALLOWABLE LOAD ..... 909 psi

MAXIMUM ALLOWABLE INTERNAL PRESSURE ..... 3,000 psi

CYLINDER I.D. ..... 2.50 in.

ROD O.D. ..... 1.50 in.

STROKE ..... 34.94 in.



DETAIL "B"
SCALE: 3X

LIFT CYLINDER ASSEMBLY

ASSEMBLY NUMBER LCR100-B

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REV. #	LOG #	DATE
1		04/19/02

REF: S:\Equip Manuals\Dwgs\LCR\LCR100-B rev1.wpg

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CLINCHER® LOADCELL and TORQUE GAUGE ASSEMBLIES

The **CLINCHER®** Tong is available in versions which accommodate compression loadcells or tension style loadcells.

Part Number	SM50-40-T
Torque Rating	50,000 ft lbs
Handle Length	40 inches
Loadcell Type	Tension
Loadcell Manufacturer	SUPERIOR MANUFACTURING & HYDRAULICS, INC.
Torque Gauge Mfr	TOTCO or equivalent
Torque Gauge Size	6"
Gauge Mount	"L" Bracket
Hose Length	6 ft
Assembly Documentation	Calibration Certificate

CLINCHER® Loadcells and Torque Gauges are produced by several manufacturers. The information provided by MD TOTCO may not be applicable to all torque gauges or loadcells. This reference information is provided with the permission of MD TOTCO.

CLINCHER® LOADCELL and TORQUE GAUGE ASSEMBLIES

To request copy of TOTCO Instruction Manual, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 12 MOTOR SERVICE MANUALS

To request copy of Rineer Motor Service Manuals, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 13 CONTROL VALVE TECHNICAL DATA

To request copy of Directional Control Valve Technical Data, please contact:

Superior Manufacturing & Hydraulics
4225 Hwy. 90 East
Broussard, LA 70518
Phone: 337-837-8847
Fax: 337-837-8839
www.superior-manf.com

SECTION 14 VALVE TECHNICAL DATA

To request copy of Valve Technical Data, please contact:

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Fax: 337-837-8839
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